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Essays in Public Economics

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Abstract

In the first essay I estimate the effect of a tuition subsidy, in the form of in-state tuition for undocumented immigrants, on the college enrollment decision of non-citizen Mexican immigrants. Using data from the Current Population Survey, I capture the variable impact of the policy across age by estimating the impact on two different age groups. I also estimate the differential effect across genders. The policy increases the college enrollment among non-citizen Mexican immigrants. The subsidy is associated with a 1.5 percentage points (or 15 percent) increase in college attendance of younger immigrants aged 18 to 20 years old. Older immigrants, aged 21 and 22 years old, are more responsive: their college enrollment doubles with the introduction of the in-state tuition policy. Irrespective of age, the subsidy increases the likelihood of college attendance more for men than it does for women. Subsidizing the cost of college results in an 7.7 percentage points (or 86 percent) increase in college attendance of men while women's participation drops by 72 percent. Irrespective of age, married women are more likely to drop out of college when in-state tuition is offered. The college participation of U.S. citizens is trivially impacted by the in-state tuition subsidy to undocumented students.

The second essay concentrates on answering the question of whether couples strategically time their divorce so as to minimize their joint tax bill. Previous empirical literature that analyzes the changing trends in the family dynamics often rely on

identifying the demographic, the sociocultural, as well as the economic factors that influence those changes. The role of the income tax code and the tax liability faced by each individual according to marital status has only recently been considered as a possible influence on the likelihood and timing of divorce. Using household data from the Panel Study of Income Dynamics, I build a parametric model of the divorce timing decision as a function of the change in the tax burden caused by whether the divorce takes place by the end of the year or not.

Results provide evidence that individuals do respond to tax incentives and changes in the marriage tax penalty alters the relative value of divorcing early. A doubling of the relative marriage tax price is going to reduce the probability of accelerating the divorce by 3.2% when the price is computed under the assumption that the spouse with the higher income gets the dependents. The effect is slightly larger (i.e. 3.7%) when the relative marriage-tax price is computed under the assumption that the spouse with the higher income gets the dependents and also gets the "Head of Household" filing status.

Dedication

Pentru parintii mei, Rodica si Doru Cojoc, pentru ca au crezut in mine si pentru tot suportul oferit de-a lungul anilor.

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Chapter 1

The Effect of Tuition Subsidies on Higher Education Enrollment of Mexican Immigrant Students

1.1 Introduction

States differ greatly in how they charge illegal residents for higher education. Some states had enacted laws that offer them in-state tuition if they enroll in public schools (Olivas, 2009). Other states are concerned with the effect of such legislation on the enrollment of citizens, and have passed laws explicitly denying undocumented immigrants the option of paying in-state tuition. Informed public policy depends crucially on understanding how subsidies affect the enrollment decision of citizens and illegal immigrants.

In this paper, I use data from the 1997 to 2008 Current Population Surveys to assess the effect of offering in-state tuition on college enrollment. I model whether an individual is attending college as a function of personal characteristics, state specific

variables, and tuition. I find that subsidizing the cost of college has a large positive effect on the enrollment of non-citizen Mexican immigrants. College attendance increases among young immigrants, aged between 18 and 20 years old, and it doubles among older immigrants aged 21 and 22 years old when they have the opportunity of paying in-state tuition.

One of the arguments against subsidizing tuition is that it might channel educational resources away from the native-born students. Some also fear that the policy might encourage future inflows of undocumented immigrants since affordable higher education will signal that illegal immigration is actually rewarded (Berger, 2007; Redden, 2007). I address here only the first concern, examining whether the policy displaces any citizens from higher education institutions. The data show that providing in-state tuition to undocumented students has a trivial impact on the college participation of U.S. citizens.

Despite its importance for public policy, the current literature has not analyzed how subsidizing the cost of college affects college enrollment among illegal immigrants. Kaushal (2008) provides the only published empirical study that asks whether subsidies for undocumented immigrants have any effect on their college enrollment. She finds a positive and significant causal relationship between the education subsidy and the college enrollment of the undocumented students. Providing in-state tuition results in a 2.5 percentage points (or 31 percent) significant increase in college enrollment of young adult non-citizen Mexicans, and has no significant effect on the educational outcomes of natives.

Kaushal's analysis relies on the assumption that the subsidy has the same effect across all age groups and the same impact across all states. The policy is more likely to have a larger impact on the college decision of those that are 18 or 19 years old, and the subsidy is less likely to increase the likelihood of college attendance for

someone who is older and has been out of high school for a while. Given the large variation in tuition that public universities charge resident and nonresident students across states, the subsidy is likely to have a different impact from state to state. An aggregate estimate confounds the true effect of the policy and cannot provide a clear assessment of how the in-state tuition changes the behavior of its intended beneficiaries.

In this paper, I estimate the effect of the subsidy separately for specific age groups and for each state. I also exclude from the sample the 17-year old illegal immigrants since they are less likely to be affected by the subsidized education.[1] I capture the differential effect of the subsidy on young and older adults by estimating the impact on two different groups. The younger group consists of those between the age 18 and 20 years old, while the older group includes those aged 21 and 22. The subsidy is associated with a 1.5 percentage points (or 15 percent) increase in college attendance of younger immigrants while older immigrants are more responsive. Their college enrollment doubles from 5 to 10.9 percent in response to the subsidy.

The effect of the in-state tuition subsidy also varies considerably across states. Tuition is a critical factor in enrollment decision and a significant indicator of educational quality provided.[2] My empirical specification also controls for the direct effect of tuition on college attendance of undocumented immigrants. This captures the differential impact of the subsidy across states. If subsidized in-state tuition is offered by only low quality schools that do not have a great reputation for higher life-

[1]Table D.1 in Appendix D provides detailed estimation of the impact of the in-state tuition by age and state. I conduct a similar estimation for Kaushal's sample (1997-2005) and similar effects are present; indicating that 17 years old adults are negatively impacted by the policy, while those aged 18 and 19 and almost twice as likely to attend college in response to in-state tuition subsidy. These results are available in Appendix D, Table D.3.

[2]The idea that tuition reflects educational quality was first introduced by Spence (1973) in which a higher tuition rate acts as a signal to potential students of the high quality of education offered by the school. Thus, a state can only charge high tuition if there is some positive value to that state's higher education.

time earnings, then the policy might have no impact on undocumented students. The policy might not encourage them to undertake the investment and enroll in college. Similarly, if tuition subsidies are offered only in states where tuition is high, then resident tuition charges may be so large even after the subsidy is offered that implementing the policy does little to encourage enrollment. I estimate the subsidy to have the greatest impact on college participation in California (5.2 percentage points or 44 percent increase), Texas (3.1 percentage points or 29 percent increase) and Washington (4.9 percentage points or 89 percent increase) while non-citizen Mexicans in Oklahoma and Nebraska are dropping out of college.

Differences in college attendance across genders have been systematically analyzed in the literature. Existing evidence shows that women are more sensitive to college costs and are more likely to attend college when the attendance cost is reduced.[3] At the moment, however, there is no published analysis on gender effects for undocumented immigrants. This paper also explores the difference in the response of undocumented men and women to the in-state tuition subsidy. For undocumented immigrants, the overall college enrollment rate for women is slightly larger than that for men. Irrespective of age, the subsidy increases the likelihood of college attendance more for men than it does for women. Subsidizing the cost of college results in an 7.7 percentage points (or 86 percent) increase in college attendance of younger men while women's participation drops by 72 percent. Similar results are present for older men and women.

The analysis of gender differences suggests that men are more responsive to price reductions in getting a higher education than women. In order to explain this surprising effect I analyze whether marital status constitutes a significant factor that

[3]Dynarski (2007) shows that state merit aid scholarship programs have a significant positive impact on the college attendance of women by resulting in a 6.3 percentage points increase in attendance.

drives the result. Married men compared to single men are less responsive to the price reduction. For women, however, marital status has a significant impact on the college decision and married women are more likely to drop out of college. Among young married women, the price reduction results in a 9.2 percentage point dropout rate. Older married women are dropping out at a lower rate and price reduction results in a 7.2 percentage point decrease in their college enrollment. Given the positive response for married men, this result might suggest that women are more likely to drop out of college and join the labor market in order to take care of household and increase the potential of future earnings in the household.

1.2 In-State Tuition Policy

The debate of providing school related benefits to illegal immigrants can be traced back to the *Plyler v. Doe* case in 1982 when the U.S. Supreme Court granted undocumented immigrant children with the right to attend public schools at no charge to them.[4] Under this decision public schools cannot engage in any action that would deny students access to education based on their immigration status. Although this verdict has granted undocumented immigrants the right to free public education, it does not guarantee free access beyond the K-12 level. The *Plyler* decision did not establish the rights to public higher education for immigrants.

Prior to 1996, public universities in a few states, such as California and New York, offered in-state tuition to undocumented students that met certain residency requirements. In 1996, Illegal Immigration Reform and Immigrant Responsibility Act

[4]In *Plyler v. Doe* (1982), the Supreme Court extended the Equal Protection Clause of the Fourteenth Amendment to undocumented immigrants and stated that undocumented children have the same right to a free public education as U.S. citizens and permanent residents. Undocumented immigrant students are obligated, as are all other students, to attend school until they reach the age mandated by state law (Olivas, 2009).

(IIRIRA) set the federal rules for states' implementation of in-state tuition policies for illegal immigrants. The main provision of this act, referred as section 505, was that the Federal government banned public colleges from offering undocumented immigrants in-state tuition unless out-of-state U.S. citizens that satisfy the same requirements were also offered the lower tuition.

The federal ban set by the IIRIRA, however did not prohibit states from offering in-state tuition benefits to undocumented immigrants. During the last ten years, legislators in thirty states have considered legislation that would allow undocumented immigrants to receive in-state tuition. Legislatures in Texas, California, Utah, New York, Washington, Oklahoma, Illinois, Kansas, New Mexico and Nebraska have enacted laws that grant illegal immigrants the right to public education at a resident tuition price.[5] These states have to provide the same in-state discount rate to current residents of other states who previously went to high school and graduated in the state. For instance, a resident of Oregon who attended high-school for three years in Washington and graduated from a high-school in Washington is eligible for in-state tuition in both Washington and Oregon.

in Washington state, if a 20 year old adult that is a U.S. citizen has lived in the state for three years immediately before receiving a high school diploma but moved to Oregon after graduation and intends to return to college in Washington, public universities and community colleges in this state need to charge him or her the in-state tuition fee.

Three of the five states with the highest proportion of undocumented population in the country, California (22.7%), Texas (12.2%) and New York (7.7%), have adopted in-state tuition policies. Texas became the first state that enacted this type

[5]Undocumented immigrants become residents of the state only for the purpose of qualifying for the subsidized in-state tuition.

of legislation in 2001. According to the Higher Education Coordinating Board, three years after Texas enacted the legislation, 3,792 undocumented students attended public colleges and universities in Texas. This represent a ten-fold increase since 2001. Although most states do not offer any financial aid for illegal immigrants, students in Texas, Oklahoma and Utah are eligible to get state financial aid in form of grants, scholarships and loans. The state financial aid helps reduce even more the cost of attending college. During the 2004-2005 academic year in Texas, there were a total of 1,362 undocumented students that were awarded state aid amounting to a total of $5,561,028.[6] Table A.1 in Appendix A provides detailed information on the states that offer in-state tuition and the year when the law was enacted, as well as whether the state offers state aid to undocumented students.

In all states that offer in-state tuition, in order to be eligible an undocumented student will have to meet specific residency requirements. In most states, eligibility requires a student to have attended school in the same state for at least three years. In New York and Oklahoma only 2 years of state residency are needed to establish eligibility, while New Mexico requires students to reside in the state for only 1 year. In all ten states, the student is also required to have graduated from high school or received a GED in that state. Additionally, each undocumented student is required to sign an affidavit stating intent to legalize his or her status, except for those living in New Mexico.[7] Due to the IRIRIRA, citizens who meet these criteria are also eligible for subsidized education in those states.

[6]The numbers are provided by National Association of State Student Grant and Aid Programs (NASSGAP) and represent less than 1 % of total aid offered in the state.

[7]California is the only state that has a clause in its in-state tuition law that makes student information obtained through the citizenship affidavits confidential (California, Assembly Bill 540, Chapter 814 (2001)). Non confidentiality might impact negatively the number of students who want to take advantage of the policy since entire information could be made available to legal authorities and thus increasing the likelihood of deportation.

1.3 Theoretical Framework and Literature Review

Becker (1964) provides a theoretical framework on the choice of schooling. The decision of getting a higher education depends upon the costs incurred in obtaining a college degree and the expected stream of future benefits from getting a college degree. A rational student will undertake the investment as long as the expected future benefits, such as higher future earnings, exceed the costs.

For the undocumented students in the U.S., higher education not only offers the option of greater future earnings and improved future labor market opportunities, but also provides them with increased opportunity to legalize their status in the country. A college degree can provide the immigrants with a set of skills that make them more valuable for employers and thus more classifiable for employment based visas. For instance, higher education makes EB3 and H1B visas accessible to immigrants. College education for undocumented students can also improve their likelihood to marry and thus allow them to legalize their status (Duncan and Trejo, 2007). Given those opportunities, a reduction in tuition could encourage more undocumented students to seek a college degree.

The undocumented student, however, might face a different cost-benefit analysis. The fear that applying for resident tuition will result in greater risk of deportation, in addition to the uncertainty that there will be any real returns in the labor market, make the undocumented student less likely to take advantage of the subsidized education. Once the student signs the affidavit that as an undocumented student he or she will pursue to legalize his status, and given the non confidentiality clause that comes with the in-state tuition reduction in nine of the ten states, chances of deportation are increased. On a similar note, the limited number of employment based visas that are available each year generates uncertainty about whether the college investment

will indeed pay off in the way that it will actually improve the chances of getting a job in the U.S.[8]

The low income in the families of undocumented immigrants makes higher education less affordable and it can also force the undocumented student to join the labor market and earn lower wages in low skilled jobs as a way of helping with the financial situation of the family. In 2008, 65 percent of the foreign born population between the ages of 17 and 24 were participating in the labor market. Similarly, 64 percent of non-citizen young Mexicans between the ages of 17 and 24 were employed. Together, those factors can help explain why price reductions, even though quite substantial in some of the states, might not encourage undocumented immigrants to take advantage of the subsidized education in those states.

The existing literature consists of a significant number of studies that analyze the relationship between costs and college enrollments. Leslie and Brinkman (1987), as well as Heller (1997) provide an extensive survey of the literature on the relationship between prices and enrollment in higher education. They conclude that higher tuition costs do indeed result in decreased college enrollment. The role of educational related policies, such as subsidies, financial aid and grants offered to students, has also been intensively investigated in the literature. A significant amount of research concentrated on the effect of those educational related policies on the college enrollment decision among different social and ethnic groups. Enrollment rates are more responsive to changes in the cost of attending college for lower income students and underrepresented minorities (Ellwood and Kane, 2000; Heller 1997).

As previously mentioned, Kaushal(2008) provides the only empirical study that analyzes the effect of subsidized education on the educational attainment of ille-

[8]According to U.S. Citizenship and Immigration Services, each year there are at least 2800 EB3 visas for each country. H1B visas are capped at 65,000. Both legal, such as foreign students, and illegal residents compete for this limited number of visas (USCIS, 2009).

gal immigrants. Using data from the monthly outgoing rotation files of the CPS, she estimates the effect of the policy on a sample of young adult foreign born Mexicans. The main finding of her study is that the policy of offering in-state tuition to undocumented students is associated with a significant increase in the college enrollment rate. The proportion of young adult Mexicans that are enrolled in college increases by 2.5 percentage points. The policy is also estimated to have no impact on college attendance of U.S. citizens.

1.4 Data

The empirical analysis uses data from the Current Population Survey (CPS) from 1997 to 2008. The CPS is a monthly survey of about 50,000 households. Each household in the CPS is interviewed each month for 4 consecutive months, then ignored for 8 months, then interviewed again for 4 more months. Similar to Kaushal (2008), restricting the sample to the monthly outgoing rotation groups (i.e. MORG files) I get similar but less precise results than using each monthly survey.[9]

The monthly CPS provides individual detailed demographic characteristics and economic related information, thus facilitating access to a significant amount of control variables that can explain the existing variation in college attendance. The use of the CPS is advantageous because this survey also collects data on the citizenship status of foreign born individuals, as well as data on the country of birth and the arrival year in the United States.

The main drawback of this survey is the fact that it does not include information on the visa status of immigrants, thus making it impossible to identify accurately

[9]The MORG files include only the households interviewed during the 4th and the 8th interview month. The monthly rotation outgoing group consist of approximately 30,000 individuals for each month (NBER, 2008). Estimation results based on the MORG data only are available upon request.

the illegal immigrants in the United States. As the visa status is not recorded, the survey confounds legal and illegal immigrants. The survey is also likely to undercount the number of illegal immigrants since they are less likely to participate in the survey due to fear of being deported. According to the Census Bureau, Census and CPS data undercount the undocumented by 10 percent. Kaushal (2008) provides a rough estimation of the size of the downward bias that arises due to these problems. There are 80% illegal immigrants in the U.S, and thus undercounting will result in a 8 percent bias that impacts the main effect of interest.[10] Additionally,the presence of 20 percent legal immigrants will add to the bias such that there will be a 28 percent downward bias in the estimated effect of interest.

Given that undocumented immigrants are difficult to identify, and because immigrants from Mexico constitute the largest share of illegal immigrants, this study is based on a sample of young adult non-citizens from Mexico. In 2008, immigrants from Mexico represented 60 percent of the entire undocumented population in the U.S. (Passel, 2009). The sample is further restricted to all Mexicans who have arrived in the United States after the year 1987. This restriction is imposed because all foreigners who arrived in the United States prior to 1987 were legalized under the Immigration Reform and Control Act of 1986. In order to satisfy the residency requirement for in-state tuition eligibility, the sample is further restricted to all Mexicans who have lived in the country for at least as many years as are required to satisfy state eligibility requirements for in-state tuition. For the states of New York and Oklahoma I impose a 2 year restriction. For New Mexico I impose a 1 year restriction. For the other seven states that adopt in-state tuition, I use a 3 year restriction.

Monthly state unemployment rates are provided by the Bureau of Labor Statis-

[10]According to Passel (2005), prior to 2005 over 80 percent of immigrants from Mexico are undocumented.The undercount percent (i.e. 8 percent) is computed as follows: 80% illegal immigrants multiplied by the 10% undercounted illegal immigrants.

tics, while the state minimum wage is made available by the U.S. Department of Labor. For states that do not have a minimum wage, such as Alabama and South Carolina, I use the federal minimum wage for that year. Data on the average academic tuition rates for both residents and non residents, by state and year, are provided by the Higher Education Coordination Board surveys. Data in those surveys provide a close approximation of state averages based on tuition charges at 214 state public institutions. The sample includes tuition data for both undergraduate public universities and community colleges. However, the sample does not include tuition information for community colleges in North Dakota as data is not available for all years. On a similar note, undergraduate tuition for universities and colleges does not include the states of Alaska, Delaware, Hawaii and Wyoming due to lack of consistent tuition series for those states. Thus, all five states mentioned above are dropped from the analysis. Tuition fees and minimum wage are deflated by Urban CPI and all dollar values are in constant 2008 dollars. A complete description of how the data sample was created is included in Appendix A.

Summary statistics for the main samples used in the analysis (i.e. non-citizen Mexicans, Latino (not Mexican) immigrants, non-Latino immigrants, as well as two distinct citizen groups) and state-year level data are presented in Table 1.1. The younger group, those aged between 18 and 20 years old, are more likely to attend college than the older adults (i.e. those aged 21 and 22 years old). Across the foreign born non-citizen groups there is a significant difference in the proportion of the population that attends college. This is true regardless of the age group considered. For the Mexican group, only 12 percent of the young adults attend college. In contrast, for the same age group, college attendance is significantly higher among U.S. citizens (i.e. 38 percent participation rate for all U.S. citizens aged 18 to 20 years old and 29 percent for the U.S. citizens with Mexican parents). In terms of age and gender there

are no major differences across the groups. With respect to marital status, across all groups considered, older adults are more likely to be married. For the sample of immigrants from Mexico the proportion of married adults over the age of 21 is twice as large as the proportion of young married adults (i.e. 33 percent versus 16 percent). Regardless of the age group considered, immigrants from Mexico have the largest proportion of married individuals compared to the other groups. There are no major significant differences across the non-citizen immigrant groups in terms of the average number of years they have been in the U.S.

1.5 Empirical Model

The main objective of this study is to determine the impact of subsidized education on the college enrollment of undocumented immigrants. I model whether or not an individual is attending college as a function of personal characteristics, state specific characteristics, and tuition prices. The starting point of my empirical approach is that the impact of in-state tuition varies across younger and older adults. The effect of the subsidy also varies across states and controlling for tuition prices might help explain some of this variation. Undocumented immigrants do not qualify for any legal financial aid and tuition corresponds to a large share of their cost to attend college. For each age group considered (i.e. 18 to 20 and 21 to 22 years old), the effect of eligibility for in-state tuition on college enrollment of non-citizen young Mexicans in those groups, is estimated by the following regression model:

$$\begin{aligned} College_{ijt} &= \alpha_1 IST_{jt} + \alpha_2 OST_{jt} + \alpha_3 IST_{jt} * Policy_{jt} \\ &+ \alpha_4 OST_{jt} * Policy_{jt} + \alpha_5 Policy_{jt} \\ &+ Z_{jt}\Phi + X_{ijt}\Gamma + \delta_t + \delta_j + \delta_m + u_{ijt} \\ & i = 1, ..., N\,(persons) \end{aligned} \tag{1.1}$$

$$j = 1, ..., 51\,(states)$$
$$t = 1997, ..., 2008\,(years)$$
$$m = 1, ..., 12\,(months).$$

The dependent variable, $College_{ijt}$ refers to college enrollment and is recorded as 1 if the individual was attending college one week prior to the survey interview and 0 otherwise. Given the nature of the CPS survey, there is no distinction made between whether an individual attends a 4-year or a 2-year college. Thus, this dependent variable refers to the overall college enrollment. College attendance depends on in-state tuition (IST), out-of-state tuition (OST), the policy of granting illegal immigrants in-state tuition ($Policy$), and the interaction of the policy variable with tuition levels. It also depends on a set of individual characteristics (X), a set of state specific characteristics (Z), and year, state and month fixed effects.

The policy variable and tuition are the key explanatory variables in equation (1). The variable $Policy_{jt}$ controls for the presence of education subsidy. It is coded as 1 if a state j offered in-state tuition to undocumented immigrants in year t, and 0 otherwise. This indicator variable is matched by month and year to the exact date when the legislation became effective rather then when the legislative bill was passed. The policy variable is lagged by one year since policy announced during an academic year will have an impact on college enrollment and educational outcomes after at least one year.[11] Based on the proposed model, the estimated effect of the in-state tuition on the college education of undocumented youth depends on the level of tuition charged by public universities for resident and non-resident students (i.e. $\alpha_3 IST_{jt} + \alpha_4 OST_{jt} + \alpha_5$). The price of attendance related variables, IST_{jt}

[11]Table B.2 in Appendix B provides detailed estimation of the impact of the in-state tuition by age and state when the policy variable is coded without the one year lag. Comparing those results to the one-year lag results presented in Table B.1 it is clear that the policy is more effective one year after the enactment.

and OST_{jt}, correspond to the state average resident and non-resident undergraduate tuition fees charged at 4-year public universities and colleges in state j and year t. By directly controlling for the tuition prices, this specification allows me to obtain a finer measurement of how the in-state tuition policy affects college enrollment.

The coefficient α_3 estimates the effect of in-state tuition fees on the college enrollment of those that live in a state that offers in-state tuition benefits relative to those that live in a state that does not offer the subsidy. Similarly, α_4 estimates the effect of non-resident tuition prices for those undocumented Mexicans that live in one of the ten states that offer subsidized education relative to those that are not eligible and live in states that charge non-resident tuition. Intuitively, given that once eligible a student does not face the high non resident prices, this coefficient is expected to be zero. Any other value is more likely to reflect a quality measure of the college education offered in the state. Thus, a positive relationship between the non-resident college price, when the student is eligible for in-state tuition, and the probability of attending college might be interpreted as evidence that the state offers a high quality of education relative to states without the in-state tuition policy.

Using the model described in equation (1), I also estimate the impact of the subsidy when tuition levels control instead for prices charged at community colleges. On average, community college prices are about a third of the price charged by public universities. For instance, in 2008 the average resident tuition for community colleges in the state of Virginia was \$2,404, while public universities in the same state charged resident student \$6,854 in tuition fees. Out-of-state prices show the same type of divergence, with an average of \$7,659 for non-residents that attend community colleges and a high \$17,150 for those out-of-state students that attend public universities. Given those significant differences, and given the fact that undocumented students come from lower income households, community colleges could represent a more ac-

cessible option.

The vector Z_{jt} includes time varying state characteristics such as the monthly unemployment rate, the state minimum wage, the proportion of the adult (aged 30 to 54 years) non-Hispanic white population with at least some college education, as well as the proportion of the adult (aged 30 to 54 years) Mexicans with at least a high school diploma. Those two proportions are computed from the CPS by using a three-year moving average and are included in the model in order to control for state-specific trends in education as well as for trends in educational aspirations of Mexicans. The state minimum wage provides a proxy for forgone income while in college. The monthly unemployment rates control for the economic conditions prevailing in the state. This also provides a proxy for the outside options that are available to those not in college.

Individual characteristics are included in the X_{ijt} vector and include the following: age (included as a dummy variable for each year of age), sex, marital status and the number of years lived in the U.S. I expect that those individuals that have lived in the U.S. for a longer period of time to be more likely to enroll in college since they get better accustomed. An immigrant that has lived longer in the country is more likely to be familiar with the American system of higher education, more likely to get a high school degree, and more likely to master the English language.

State fixed effects (δ_j), month of the year effects (δ_m), and year fixed effects (δ_t) are also included in order to control for the variation in college enrollment and educational attainment. Monthly fixed effects are included in order to control for the low college enrollment during the summer terms. Year fixed effects control for the existing time trends in the proportion of undocumented students that are enrolled in college for all the states in the sample.[12] State fixed effects are included in order to

[12]I use the school fiscal year, July 1st through June 30th. Using the calendar year does not result

control for intrastate variation caused by any unobservable predictor or observable predictor that is not explained by the covariates included in the model. For instance, average differences in the amount and availability of financial aid offered by the states, as well as average differences in the number of teachers available or the amount of government finance toward public education, are all going to be captured by the state fixed effects. I also include state-specific linear trends in order to ensure that pre-existing trends do not confound the effect of the policy on the educational outcomes of undocumented young adults. Additionally, in order to control for the differences in college enrollment between men and women across time I also include separate female-specific year effects.

The effect of the policy is also estimated on two additional groups of non-citizens who are less likely to be undocumented: non Mexican Latino immigrants and non-Latino immigrants. According to the Pew Hispanic Center, 30 percent of the foreign born population from other Latin America countries and 12 percent of the foreign born from region outside of Latin America are undocumented. The non Mexican Latino sample includes a large proportion of immigrants from countries such as Cuba, Ecuador and Dominican Republic while the non Latino sample consists mainly of immigrants from Asia, Africa and Europe. These samples are also restricted to immigrants that arrived after the year 1987 and that have lived in the country for at least as many years as are required to satisfy state eligibility requirements for in-state tuition.

Kaushal (2008), uses the non-Mexican Latino and the non-Latino immigrant groups in order to test the validity of her results. She uses these quasi-control groups because immigrants in these groups are more likely to be legal temporary residents, such as foreign students, or legal permanent residents. Foreign students do not qualify

in any difference in the estimates.

for the in-state tuition subsidy and permanent legal residents are always eligible for in-state tuition. Because of this, immigrants in these groups are less likely to be the beneficiaries of in-state tuition subsidy. Thus, the policy should have a small or no impact on their likelihood to attend college. If the in-state tuition policy has the same impact as on the college attendance of undocumented Mexicans, then there are other unobserved factors that are correlated with the policy that affect all foreign-born young adults, regardless of their legal status in the country. Using my empirical strategy, I estimate the impact of the subsidy on the college enrollment of immigrants in these two groups in order to establish their validity as control groups for undocumented Mexican immigrants.

Additionally, I also estimate the effect of the policy on the native U.S. population by considering the effect of in-state tuition on the following two groups: U.S. citizens of Mexican parentage and U.S. born young adults. The in-state tuition subsidy is not exclusive for the undocumented and states that adopt the in-state tuition policy have to offer the same tuition rate to the U.S. citizens that satisfy the state residency requirements. Thus, a reduction in the price of attendance might induce more U.S. citizens to participate in higher education. On the other hand, as the opponents of the in-state tuition for undocumented claim, the reduced tuition can have a negative impact on natives since increased number of immigrants that compete for a higher education will channel educational resources away from the native-born students.

1.6 Results

Table 1.2 presents the college attendance rates of young adults during the 1997-2001 period; a period when nearly all public universities did not provide subsidized

education to the undocumented students.[13] For the two age group in my analysis, college attendance rates are presented for each sample considered, as well as for the men and women in each sample. Those rates will serve as the benchmark in assessing the impact of the policy on college enrollment for each group.

Before 2001, across all groups, non citizens have lower college participation than U.S. citizens. This is true regardless of the age group considered. Compared to the other non citizen groups, the group of Mexicans has a significantly lower college attendance rate. Only 10 percent of the Mexican young adults between the ages of 18 and 20 are enrolled in college. Compared to the Mexican group, the non-Mexican Latino immigrants have significantly higher educational attainment, with 23 percent college attendance. On a similar note, for the older group, only 5 percent of the Mexican adults are enrolled in college, while 23 percent of non-Mexican Latino immigrants are attending college. Out of all the the samples constructed (including both citizen and non-citizen samples) the non Latino group has the highest college attendance rate for both young and older people in the sample. 44 percent of non Latino young adults between the ages of 18 and 20 are enrolled in college and 45 percent of the older immigrants in this immigrant group attend college. Similar discrepancies in college participation across groups persist after 2002 and most groups show a small increase in college attendance after 2002. This is true for all immigrant and age groups, except for the older non Mexican Latino immigrants for whom there is a 2 percent decline in college enrollment after 2002.

Panel B of Table 1.2 shows that across all age and immigrant groups considered college participation rates are greater for women than men. Data also suggest that irrespective of age or immigrant group considered women are more responsive than men. For the non-citizen Mexican immigrants the introduction of the tuition

[13]New York is the only state that offered subsidized education during the period 1997-2001.

subsidy increases the gender gap in college enrollment. 5 percent more women than men attend college after in-state tuition is introduced. Irrespective of the age group considered, among non-citizen Mexican immigrants 5 percent more women than men are attending college. For the 18 to 20 year old population, among the non-Mexican Latino immigrants, 11 percent more women than men are attending college representing a 1 percent increase in the gap prior to the introduction of subsidized education. The price reduction, has a larger impact among the older non-Mexican Latino immigrants, and the gap between women and men increases from 2 percent to 11 percent after the in-state tuition is offered. For the younger non-Latino immigrants the policy does not have a different impact on the college enrollment of men and women while it slightly increases the rate of enrollment among older women in this group. Among the U.S. citizens considered, the college enrollment gender gap is slightly larger with 8 percent more women than men attending college before 2001.

Table 1.3 and Table 1.4 present the estimated impact of the policy on college enrollment of young non-citizen Mexican adults for each specific age group; for the 18 to 20 years old adults and the 21 to 22 years old adults respectively. This basic estimation does not control for tuition prices as its main purpose is to emphasize the fact that the impact of the educational subsidy policy varies considerably across states. This fact should be considered when making inferences about the main impact of in-state tuition subsidy. Estimation of equation 1.1 without the control of tuition prices and without allowing the policy effect to vary by age and across states, allows me to estimate an aggregate impact of the in-state tuition subsidy on the college enrollment decision.[14] The effect is similar to Kaushal (2008). Irrespective of the age group considered, the overall aggregate impact of the policy suggests that reduction

[14]Refer to the Notes section in Table 1.3 and Table 1.4 in order to get the value of aggregated policy effect on college enrollment of young adults non-citizen Mexicans.

in tuition charges results in a 2.1 percentage points increase in college participation of undocumented Mexican immigrants. For the younger group, this represents a 21 percent increase over the mean base level of 10 percent college enrollment. On a similar note, among the older population the overall aggregate impact of the policy suggests that adopting the in-state tuition policy increases the likelihood of college by 42 percent (i.e. 2.1 percentage point increase over the mean base level of 5 percent).

Analyzing the impact by state, however, the policy effect seems to be driven by a few states. This is true for both age groups considered. For the younger group, the impact of the policy is considerably larger in California, Washington and Texas. In contrast to this, the policy has a negative impact in Nebraska while for the older group implementation of the policy in Nebraska results in a significant increase in the likelihood of attending college. In order to better capture the variation in the impact of the policy across states I include the tuition prices in my estimation. Tuition prices vary over time and without controlling for this variation the estimated effect represents an overall effect. If the existing variation is only driven by differences in tuition prices, then my new state specific estimates should approximate the state specific aggregate policy effect presented in Table 3 and Table 4. Otherwise, if tuition does not pick the entire effect, then there are other factors that need to be considered.

Using the model described in equation (1.1), I first estimate the impact of the subsidy when tuition prices control for resident and non resident tuition prices charged by public 4-year universities and colleges. Then, using the same model, I estimate the impact of the subsidy when tuition prices control instead for 2-year public community college tuition prices. In both estimations, given the specification of the model presented in equation (1.1), the effect for the main variable of interest, the policy indicator variable, depends on the level of tuition charged either by public universities or by community colleges for resident and non-resident students. For each

age group considered in my analysis, using the mean level of tuition, point estimates for the in-state tuition subsidy for undocumented Mexican students are presented in Table 1.5. Panel A presents the point estimates when I use 4-year public university prices while Panel B presents the point estimates when I control for tuition prices at public community colleges. Differences between men and women with respect to their likelihood of attending college are also presented in this table.

For the overall undocumented Mexican population in the sample, the estimates suggest the policy is associated with a 1.5 percentage points increase in college enrollment among the young adults aged 18 to 20 years old. The effect is not statistically significant and represents a 15 percent increase in enrollment over the base level of 10 percent (refer to Table 2). Compared to the younger group, the older Mexican adults are more responsive and in-state tuition subsidy increases the likelihood of attending college among these adults by 5.9 percentage points. This effect is statistically significant. Adopting the in-state tuition will double the proportion of undocumented students aged 21 and 22 who attend college.

In Panel B of Table 1.5 tuition prices control for 2-year public community college fees. Average community college attendance prices are smaller than public university prices. This difference makes community colleges a more accessible option for getting a higher education and the policy has a larger effect. This is true for students from very low income families that cannot substitute into 4-year public schools when in-state tuition is offered. Enrollment decision for community college is also a more spontaneous decision and thus the policy has a more immediate and smaller impact on the likelihood of attending college. Among the younger adults, the estimated effect of the in-state tuition subsidy is slightly smaller compared to the effect obtained by using public universities prices. Offering in-state tuition benefits to undocumented immigrants in the younger group results in a 0.9 percentage points increase in their

college attendance. The effect is small and not statistically significant. For the older population, adopting the in-state tuition policy has a larger impact when community college prices are used. Among those aged 21 and 22 years old, the in-state tuition policy increases their probability of attending college by 6.9 percentage points (or 138 percent increase over the mean base level).

The current analysis also estimates separately the effect of the policy for men and women in order to assess whether the policy will create different incentives between men and women and thus contribute at the existing gender gap. Table 1.5 contains the estimated effects for non-citizen Mexican men and women in each age group. In brief, irrespective of age, price reduction in tuition broadens the college attendance gap between men and women as more men than women are attending colleges when the policy is implemented. Additionally, older men are more likely to attend college when the subsidy is offered.

For the younger Mexican immigrants, the in-state tuition subsidy has a significantly much larger impact on men than women. This is true for both public university prices and community college prices. The likelihood of attending college for the undocumented Mexican men in this age group, increases by 7.7 percentage points when the policy is implemented. This represents a 86 percent increase over the average level of college participation (i.e. 9% reported in Table 1.2, Panel B). For undocumented Mexican women in this age group, offering in-state tuition results in a 8.6 percentage points decline in their probability of attending college. The large magnitude of this effect, represents a 72 percent decline over the average level of college participation for women in this group.

In contrast to the younger Mexican immigrants, the in-state tuition subsidy has a larger impact on college attendance among the older immigrants. Adopting subsidized education will more than double the proportion of undocumented Mexican

men older than 21 that are attending college (i.e. 10.2 percentage point increase over the mean base level of 4 percent). Compared to the younger Mexican women, the older women are positively affected by the subsidized tuition. Adopting the policy results in a 1.2 percentage points increase in their probability of attending college. The effect is not statistically significant.

The findings mentioned above suggest that the gap between men and women is actually getting smaller, and it is significantly becoming smaller for younger immigrants. Those estimates, however, are puzzling since the analysis provided in Table 1.2 shows that the gap between Mexican men and women became larger after states adopted subsidized education. Thus, I conclude that offering in-state tuition could decrease the gender gap between men and women.

According to the data, non-citizen Mexicans in both age groups are more likely to be married. This provides one possible explanation for the occurring changes between men and women in response to subsidized education. Men are more likely to take advantage of the price reduction and attend college in order to increase the standard of living for their families while women will enter the labor market in order to support them.

Analysis in table 1.6 presents the impact of the policy among married and single adults. Irrespective of age, single men are more likely to take advantage of the policy and attend college than married men. College attendance of married young men increases by 7.6 percentage points while attendance among single men adults increases by 8.2 percentage points. Similarly, college attendance among older men is 2.2 percentage points larger for single men than married men. Women, in general, are dropping out of college in response to tuition policy. Married women are more likely to leave college when the in-state tuition is offered. College attendance among married women between the ages of 18 and 20 years old is dropping at a rate of 9.2

percentage points, a rate that is 2.6 percentage points larger than the dropping rate of single women in this age group. Among older women, college participation of married women declines by 7.2 percentage points when in-state tuition is offered.

Given the great variation in tuition prices that is present among the states, Table 1.7 and Table 1.8 highlight the estimated impact of in-state tuition subsidy across different states. Table 1.7 presents the estimated effect of in-state tuition when I control for public university tuition prices, while Table 1.8 presents the estimated impact of subsidized education when I control for resident and non-resident prices charged by community colleges. Each table presents the estimated impact on non-citizen Mexicans, by age group and sex, in the ten states have already implemented in-state tuition policies for undocumented immigrants by 2008. I also examine the predicted effects in two states that recently have proposed legislative bills that would allow undocumented students to pay resident tuition, as well as in two states that have passed legislation that ban public universities and community colleges from offering in-state tuition to undocumented students. In brief, it should be noted that irrespective of age or tuition used to compute the estimated effect, in almost all states considered, men are more likely than women to respond to the in-state tuition subsidy. Also older men are more likely to take advantage of the subsidy when this is offered.

For the younger immigrant group, the in-state tuition subsidy has the greatest impact on college participation in California, Texas and Washington. In California, allowing undocumented young Mexicans to pay resident tuition results in a 5.2 percentage points increase in college enrollment over the base level of 11.8 (or 44 percent increase). A similar but larger effect is present when I use community college prices to compute the estimated impact of the policy. For the older immigrants in California, the impact of the subsidy is smaller. Subsidized education in this state results in a 2.5 percentage point increase in the college attendance of older immigrants, representing

a 48 percent increase over the mean base level of 5.2 percent. This estimated effect, however, is not statistically significant. Controlling for community college prices results in a much smaller and not statistically significant impact on college enrollment of older undocumented Mexicans.

On a similar note, adopting the in-state tuition subsidy in the state of Texas results in a 29 percent increase in the proportion of young undocumented Mexicans that attend college (from 10.8 percent to 13.9 percent). The impact of the subsidy is significantly larger for older immigrants in Texas and allowing undocumented Mexicans in this age group to pay in-state tuition increases the proportion that attends college by 76 percent (from 7.2 percent to 12.5 percent). Similar effects, but larger, as those in Texas are present in Washington state. Undocumented Mexicans aged 18 to 20 years old in Oklahoma and Nebraska, however, are dropping out of college when the in-state tuition subsidy is introduced. These results are mostly driven by women. Older immigrants in those states are positively affected by the subsidized education.

Subsidized education has a positive effect on both men and women in the state of California. Women are more likely than men to attend college when the resident tuition price is offered. This is true regardless of the age group considered and regardless of whether estimation controls for university prices or community colleges prices. In contrast to California, the younger undocumented Mexican men in Texas and Washington are more likely than women to take advantage of the tuition subsidy. In those states, younger men are more likely to be affected by the policy (e.g. 6.9 and 7.4 percentage points increase among those aged 18 to 20 years old compared to 6.4 and 5.6 percentage points increase among the older men). For the older immigrants, in Texas, similar results are present. Allowing undocumented Mexicans to pay in-state tuition in Texas results in 6.4 percentage point increase in the college attendance of men and 4.5 percentage point increase in the college attendance of women. Compared

to Texas, older women in Washington are more responsive and their college enrollment increases by 2 percentage points more than the college enrollment of men in the same age group.

During the last several years, Florida and New Jersey have proposed legislative bills to offer in-state tuition for undocumented immigrants. Florida and New Jersey have the third and the fifth highest concentration of illegal immigrants.[15] Using the estimated effect of the policy, I compute the impact that approval of the legislation could have on the undocumented immigrants in those two states. For the state of Florida, offering in-state tuition can result in a significant 6 percentage points increase in the likelihood of attending college among those aged 18 to 20 years old. Using the mean base level of 5.5 percent, adopting the in-state tuition will double the proportion of undocumented students that attend college. High nonresident tuition prices and low resident fees, thus resulting in a significant subsidy when the policy is implemented, explain what drives this major effect. For the older immigrants in Florida, the subsidy has a much smaller impact. The effect is significantly smaller if I use the community college tuition prices to compute the estimated impact of the in-state tuition. Regardless of the age group considered, when controlling for 4-year university tuition prices undocumented women in Florida are more likely than men to attend college if subsidized education were offered (i.e. 6.4 and 10.4 percentage points increase for young and older women compared to 4.6 and -1.7 percentage point increase for men). The reverse if true when I control for community college prices and men become more likely to respond to in-state tuition subsidy. Using the same approach, allowing illegal Mexican students to pay in-state tuition in New Jersey has a small and statistically insignificant impact on college attendance of young

[15]In 2008, 8% of the entire illegal immigration lived in Florida while 5% of illegal aliens reside in New Jersey. (Passel and Cohn, 2009)

immigrants. For the older immigrants, however, the college enrollment will go up by 11.1 percentage points if in-state tuition is offered to undocumented immigrants. In contrast to Florida, both younger and older men are more likely to be affected by the subsidy and increase their college attendance, while women are actually dropping out if subsidy were to be offered. This is true regardless of the type of prices I control for.

Since 2006, Colorado and Arizona have passed legislation that ban public universities and community colleges from offering in-state tuition to illegal immigrants. In Arizona, for instance, since the passage of legislation that requires undocumented immigrants to pay non-resident tuition fees, 1,500 students from Arizona State University and the University of Arizona and nearly 1,800 community college students have been denied financial aid or in-state tuition status. (Russell, 2007). Using the estimated impact of offering in-state tuition to undocumented students, I calculate the impact of removing the ban and allowing undocumented students to pay resident tuition in those two states. In Arizona, irrespective of age group considered, removing the ban and allowing undocumented students to pay in-state tuition could result in a 4.6 percentage points increase in the college attendance. This represents a 49 percent increase in college attendance of undocumented Mexicans aged 18 to 20 years old over the mean base level of 9.25 percent, and a 65 percent increase over the mean base level of 7.1 percent for the older immigrants. For the state of Colorado, there is no significant impact of the policy on the college enrollment of younger undocumented immigrants. For the older immigrants in the state of Colorado, removing the ban would more than triple the college attendance of the adults in this age group. In both states considered, for the younger group, men are more likely than women to change their college attendance in response to in-state tuition. On the other hand, in the older group, women are significantly more likely to be affected by in-state tuition

subsidy.

1.6.1 Additional Tests

The effect of the policy is also estimated on two additional groups of non-citizens who are less likely to be undocumented: non-Mexican Latino immigrants and non-Latino immigrants. This analysis is conducted in order to establish the validity of these control groups when my empirical approach is implemented. These samples are also restricted to immigrants who arrived after the year 1987 and that have lived in the country long enough to satisfy the residency requirements for in-state tuition. Estimated effects for the policy effect for all these groups are presented in Table 1.9.

According to Table 1.9, estimated coefficients for the non-Mexican Latino immigrants suggest that in-state tuition policy has no significant impact on the college attendance of adults in this group. This is true, irrespective of age group, sex or tuition considered. Similar to Kaushal (2008), this group constitutes a valid control group as these immigrants are less likely to be impacted by the policy and thus their decision of college enrollment should be independent of whether in-state tuition is offered to undocumented immigrants or not.

Table 1.9 also presents the estimated effects of tuition subsidy on the college enrollment of non-Latino immigrants. For the immigrants in the non-Latino group, the policy has a negative impact on their college attendance, and older immigrants are more likely than younger immigrants to drop out when the in-state tuition is offered. Younger women in this group this group are also more likely than Mexican women to respond to the subsidy. There is a 22.4 percentage points decline in college enrollment among non-Latino young women when the policy is implemented, repre-

senting a 51 percent decline over the mean base level of 46 percent. Younger men are positively impacted by the policy, but the effect is not statistically significant. On the other hand, the policy results in college dropping among the older men in this immigrant group. Similar results are present when community college prices are used. These results suggest that given my empirical approach (i.e. allowing for differential effects across age groups and directly controlling for tuition) the non-Latino immigrant group, perhaps, does not constitute a valid group.

Next, I estimate the impact of subsidized in-state tuition policy on the college enrollment of U.S. citizens. This analysis provides evidence of whether or not increased competition from subsidized education crowds out college attendance of U.S. citizens. Estimated effect of the policy on U.S. born young adults and on U.S. citizens of Mexican parentage are presented in Table 1.10. Those results provide significant evidence that offering subsidized education to undocumented immigrants does not harm the educational opportunities of U.S. citizens and it might actually results in greater college enrollment for some of them.

Allowing undocumented immigrants to pay in-state tuition does not have any impact on the college enrollment of the overall U.S. born citizens. Irrespective of the age group considered, the effect is trivial and not statistically significant when estimation uses tuition charged by 4 year public universities. Using community college prices, there is some evidence that the policy has a negative impact on the college enrollment of U.S. citizens. For the younger age group, the policy results in a 1.4 percentage point decline in enrollment. Women in this group are slightly less likely to drop out of college than men. Those results could possibly be explained by the fact that students switch from community colleges into public universities that become more affordable as the in-state tuition is offered to undocumented immigrants. For the older age group, offering in-state tuition has a positive small impact and is statistically

significant only for the overall effect.

Families with mixed immigration status are common among the Mexican families in the U.S. Young adults that are U.S. citizens with Mexican parents are very likely to have undocumented siblings or family members. Thus, the in-state tuition policy, by lowering the cost of attendance for an undocumented sibling, indirectly makes higher education more affordable for a young adult in families with mixed immigration status. For the young adults in this group, irrespective of the prices used, younger adults are more likely then older people to take advantage of the tuition subsidy. The policy results in a 10.3 percentage points (or 39.6 percent) increase in the overall proportion of young people that are attending college. The estimated effect for younger women is consistent with the previous literature and younger women are more likely than men to attend college when in-state tuition is offered. College attendance goes up by 12.6 percentage points (or 42 percent) for younger women, while college participation for men increases by a smaller 8.2 percentage points (or 37 percent). The estimated effects increases when I use community college prices. For the older adults, those aged 21 to 22 years old, the policy has no significant effect on their decision to enroll in higher education.

1.7 Conclusion

This paper provides a detailed analysis of the effect of in-state tuition for undocumented students on the college enrollment of Mexican young adults. Compared to the previous research, this analysis highlights the effect of the subsidy for specific age groups and for each state. The older undocumented immigrants, although more likely to be out of high school for a while, are more likely to take advantage of the subsidy. The estimated impact for this group is twice as large as the overall effect

reported by Kaushal (2008). Additionally, given that the impact of the subsidy varies across states, by directly controlling for tuition I can explain part of the variation that arises across states.

According to the estimation results, the presence of subsidized education results in a 1.5 percentage points increase in college enrollment among the younger adults in the Mexican group. Although the effect is not statistically significant, the effect of the policy is relatively large and represents a 15 percent increase in enrollment over the base enrollment level of 11 percent. A much larger and statistically significant effect is present for the older undocumented Mexican adults. College enrollment among the older Mexican immigrants will double with the introduction of in-state tuition policy. Irrespective of age, the subsidy is more likely to increase the likelihood of college attendance for men than for women. The likelihood of attending college for the younger undocumented Mexican men increases by 7.7 percentage points (or 86 percent) while adopting the policy will more than triple the proportion of older undocumented Mexican immigrants that attend college. For the younger women, the policy reduces their college enrollment by 8.6 percentage points, representing a significant 72 percent decline over the average level of college participation for women in this group. There is no significant impact on the college enrollment of older undocumented Mexican women (i.e. women aged 21 and 22 years old).

The analysis of gender differences suggests that men are more responsive to the subsidy than women. Current analysis also finds that marital status does create different incentives among men and women when college enrollment becomes more affordable. Both married and single men are enrolling in college when the attendance price is reduced. Married men, however, compared to single men are less responsive. On the other hand, married women are more likely to drop out of college. Given the positive response for married men, this result might suggest that women are

more likely to drop out of college and join the labor market in order to take care of household and increase the potential of future earnings in the household.

Additional analysis performed shows that the policy does not affect only non-citizen Mexicans. The college enrollment of the immigrants in these additional groups are significantly affected by the subsidized education for the undocumented students. Thus, the control groups used in previous research in order to validate the estimated effects of the policy on the college enrollment of undocumented immigrants are, perhaps, not the best groups that can validate the results of a more detailed analysis on the impact of the policy.

The study also shows that the subsidized education has a positive effect on the educational attainment of a small share of U.S. citizens (i.e. U.S. citizen with Mexican parents). This positive effect can be explained by the fact that those adults are likely to belong to families with mixed immigration status. Thus, the policy is likely to indirectly reduce the cost of attending college for citizens with Mexican parentage by lowering attendance cost for undocumented siblings or family members.

The main implication of this study is that in-state tuition subsidies encourage college attendance among non-citizen Mexican immigrants while at the same time in-state tuition for undocumented immigrants does not appear to crowd out college attendance of U.S. citizens. If the main purpose of the policy is to improve the educational opportunities of illegal immigrants, then legislators in the other states could support similar policies. Whether the potential benefits of a more educated undocumented immigrant population, such as increased tax contributions generated by higher lifetime earnings, exceed the costs of accommodating the illegal immigrants in the educational system, such as the estimated cost of providing subsidized education, is cause for future research.

Table 1.1: Summary Statistics

	Non Citizens			Citizens	
	Mexican	**Latino (not Mexican)**	**Non Latino**	**U.S. Born Overall**	**U.S. Born (Mexican Parents)**
18-20 year old population					
N	13,325	7,219	9,598	665,406	24,230
% enrolled in college	0.12	0.25	0.46	0.38	0.29
% female	45.09	47.11	47.27	49.97	50.68
Age	19.09	19.03	18.98	18.96	18.92
Married	15.86	6.68	3.61	3.97	8.19
Years in the US	8.09	7.85	7.56		
21-22 year old population					
N	12,000	6,203	7,448	407,991	13,989
% enrolled in college	0.07	0.22	0.47	0.34	0.25
% female	41.36	47.15	48.67	51.54	52.68
Age	21.54	21.53	21.52	21.50	21.49
Married	33.24	18.27	15.18	13.51	22.09
Years in the US	7.40	7.42	7.14		
State-Year Level Data	**Mean**	**Std Dev**	**Min**	**Max**	
In-State Tuition University	4490.97	1508.18	1997.36	9919.00	
Out-of-State Tuition University	11700.44	2466.91	4895.72	17150.00	
In-State Tuition Community College	2257.66	965.70	386.42	6077.99	
Out-of-State Tuition Community College	6344.65	2256.66	1950.54	13941.57	
Unemployment	4.88	1.13	2.10	11.40	
Minimum Wage	6.22	0.92	2.75	8.25	
Non Hispanic Proportion with College	0.51	0.19	0.00	1.00	
Proportion of Population with High School*					
Mexican	0.32	0.19	0.00	1.00	
Latino (not Mexican)	0.55	0.25	0.00	1.00	
Non Latino	0.88	0.10	0.00	1.00	
US born (Mexican Parents)	0.57	0.26	0.00	1.00	
US born (Overall)	0.92	0.03	0.81	0.99	

Notes: Data come from the monthly Current Population Survey from 1997 to 2008. Non-citizen samples are restricted to young adults who arrived after 1987. Dollar values are in 2008 dollars. Tuition data are provided by the Higher Education Coordination Board surveys. Data in those surveys provide a close approximation of state averages and the tuition charges are based on 214 state public institutions. *Adult population aged 30 to 54 years old computed as a three-year moving average.

Table 1.2: College Enrollment of Young Adults by Immigrant Group and Gender before In-State Tuition is Offered

	Non Citizens						Citizens			
	Mexican		**Latino (not Mexican)**		**Non Latino**		**U.S. Born Overall**		**U.S. Born (Mexican Parents)**	
18-20 year old population (N)	13,325		7,219		9,598		665,406		24,230	
College Attendance Before 2001	0.10		0.23		0.44		0.36		0.26	
College Attendance After 2002	0.12		0.26		0.46		0.39		0.31	
Difference	0.02		0.03		0.02		0.03		0.05	
21-22 year old population (N)	12,000		6,203		7,448		407,991		13,989	
College Attendance Before 2001	0.05		0.23		0.45		0.32		0.23	
College Attendance After 2002	0.07		0.21		0.48		0.35		0.26	
Difference	0.03		-0.02		0.03		0.03		0.03	
Panel B: College Attendance by Gender										
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
18-20 year old population										
College Attendance Before 2001	0.09	0.12	0.18	0.28	0.42	0.47	0.32	0.40	0.22	0.30
College Attendance After 2002	0.09	0.16	0.21	0.32	0.44	0.49	0.35	0.43	0.26	0.36
Difference	0.00	0.04	0.03	0.04	0.02	0.02	0.03	0.03	0.04	0.06
21-22 year old population										
College Attendance Before 2001	0.04	0.05	0.22	0.24	0.43	0.46	0.31	0.33	0.20	0.26
College Attendance After 2002	0.05	0.10	0.16	0.27	0.45	0.50	0.33	0.38	0.21	0.30
Difference	0.01	0.05	-0.06	0.03	0.02	0.04	0.02	0.04	0.01	0.04

Notes: Data come from the monthly Current Population Survey from 1997 to 2008. Non-citizen samples are restricted to young adults who arrived after 1987.

Table 1.3: Effect of In-State Tuition Subsidy by Age and State in States that Offer In-State Tuition for 18-20 Years Old Non-Citizen Mexican Immigrants

Policy Effects by Age Group			**Policy Effects by State**			**Policy Effects by State and Age**		
Age 18	0.011	(0.015)	California	0.034**	(0.016)	California		
Age 19	0.015	(0.015)	Illinois	0.003	(0.029)	Age 18	0.025	(0.018)
Age 20	0.034**	(0.014)	Kansas	-0.119***	(0.044)	Age 19	0.028	(0.019)
			Nebraska	-0.120**	(0.047)	Age 20	0.049***	(0.017)
			New Mexico	-0.061	(0.042)	Illinois		
			New York	0.075**	(0.033)	Age 18	-0.008	(0.030)
			Oklahoma	-0.003	(0.035)	Age 19	-0.005	(0.031)
			Texas	0.046**	(0.020)	Age 20	0.015	(0.030)
			Utah	0.002	(0.026)	Kansas		
			Washington	0.107***	(0.039)	Age 18	-0.125***	(0.044)
						Age 19	-0.123***	(0.045)
						Age 20	-0.102**	(0.045)
						Nebraska		
						Age 18	-0.130***	(0.048)
						Age 19	-0.128***	(0.049)
						Age 20	-0.107**	(0.048)
						New Mexico		
						Age 18	-0.072*	(0.043)
						Age 19	-0.069	(0.043)
						Age 20	-0.048	(0.042)
						New York		
						Age 18	0.068**	(0.034)
						Age 19	0.070**	(0.034)
						Age 20	0.091***	(0.034)
						Oklahoma		
						Age 18	-0.014	(0.037)
						Age 19	-0.011	(0.037)
						Age 20	0.010	(0.036)
						Texas		
						Age 18	0.037*	(0.021)
						Age 19	0.039*	(0.022)
						Age 20	0.060***	(0.022)
						Utah		
						Age 18	-0.009	(0.028)
						Age 19	-0.006	(0.028)
						Age 20	0.015	(0.027)
						Washington		
						Age 18	0.097**	(0.039)
						Age 19	0.099**	(0.040)
						Age 20	0.120***	(0.040)

Notes: Policy becomes effective one year after enactment date. The sample of analysis is restricted to non-citizen Mexicans young adults who entered the U.S. after 1987. Estimation controls for age, gender, marital status, race, month of the year, state and year fixed effects, monthly state unemployment rate and the proportion of the non-Hispanic White population with at least some college education. Robust and clustered standard errors in parentheses. The aggregate impact of the policy is 0.021 and is statistically significant at 10 percent. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 1.4: Effect of In-State Tuition Subsidy by Age and State in States that Offer In-State Tuition for 21-22 Years Old Non-Citizen Mexican Immigrants

Policy Effects by Age Group			**Policy Effects by State**			**Policy Effects by State and Age**		
Age 21	0.026**	(0.012)	California	0.017	(0.013)	California		
Age 22	0.016	(0.010)	Illinois	0.039*	(0.023)	Age 21	0.022	(0.014)
			Kansas	-0.134***	(0.045)	Age 22	0.013	(0.013)
			Nebraska	0.072	(0.065)	Illinois		
			New Mexico	0.005	(0.039)	Age 21	0.044*	(0.024)
			New York	0.032	(0.021)	Age 22	0.035	(0.023)
			Oklahoma	0.103**	(0.049)	Kansas		
			Texas	0.005	(0.017)	Age 21	-0.129***	(0.046)
			Utah	0.046**	(0.021)	Age 22	-0.139***	(0.045)
			Washington	0.048**	(0.021)	Nebraska		
						Age 21	0.078	(0.066)
						Age 22	0.069	(0.065)
						New Mexico		
						Age 21	0.011	(0.039)
						Age 22	0.002	(0.039)
						New York		
						Age 21	0.038*	(0.022)
						Age 22	0.029	(0.022)
						Oklahoma		
						Age 21	0.107**	(0.049)
						Age 22	0.098**	(0.050)
						Texas		
						Age 21	0.010	(0.018)
						Age 22	0.001	(0.017)
						Utah		
						Age 21	0.051**	(0.022)
						Age 22	0.042*	(0.022)
						Washington		
						Age 21	0.053**	(0.022)
						Age 22	0.044**	(0.022)

Notes: Policy becomes effective one year after enactment date. The sample of analysis is restricted to non-citizen Mexicans young adults who entered the U.S. after 1987. Estimation controls for age, gender, marital status, race, month of the year, state and year fixed effects, monthly state unemployment rate and the proportion of the non-Hispanic White population with at least some college education. Robust and clustered standard errors in parentheses. The aggregate impact of the policy is 0.021 and is statistically significant at 5 percent. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 1.5: Estimated Effect of In-State Tuition on College Enrollment of Non-Citizen Mexican Immigrants

Public University Prices	**Age 18-20**			**Age 21-22**		
	Overall	**Men**	**Women**	**Overall**	**Men**	**Women**
Policy (mean of ln(Tuition))	0.015	0.077***	-0.086**	0.059***	0.102***	0.012
α_3*IST+α_4*OST+α_5	(0.020)	(0.025)	(0.035)	(0.016)	(0.024)	(0.027)
Observations	11,915	6,534	5,381	10,611	6,226	4,385
Public Community College Prices						
Policy (mean of ln(Tuition))	0.009	0.056**	-0.042	0.069***	0.117***	0.008
α_3*IST+α_4*OST+α_5	(0.023)	(0.027)	(0.039)	(0.017)	(0.026)	(0.027)
Observations	12,034	6,620	5,414	10,792	6,354	4,438

Notes: The sample of analysis is restricted to non-citizen Mexicans young adults who entered the U.S. after 1987. Estimation controls for age, gender, marital status, race, month of the year, state and year fixed effects, monthly state unemployment rate, the proportion of the non-Hispanic White population with at least some college education, the proportion of Mexican adults 30 to 54 years old with at least a high school degree and resident and non-resident tuition prices. IST refers to in-state tuition, while OST refers to out-of-state tuition. Refer to Appendix C, Table C.1 for the values of average prices used. Refer to Appendix D for corresponding regression coefficients: α_3,α_4,α_5. Robust and clustered standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 1.6: Estimated Effect of In-State Tuition for Non-Citizen Mexican Immigrants by Marrital Status

Panel A: Public University Prices	**Age 18-20**		**Age 21-22**	
	Men	**Women**	**Men**	**Women**
Single	0.082***	-0.066*	0.105***	0.001
	(0.024)	(0.034)	(0.023)	(0.031)
Married	0.076**	-0.092***	0.083***	-0.072***
	(0.032)	(0.034)	(0.022)	(0.026)
Observations	7,220	5,956	6,863	4,893
Public Community College Prices				
Single	0.071***	-0.009	0.115***	0.001
	(0.026)	(0.039)	(0.024)	(0.030)
Married	0.064*	-0.023	0.094***	-0.073***
	(0.034)	(0.039)	(0.024)	(0.026)
Observations	7,308	5,997	7,007	4,953

Notes: The sample of analysis is restricted to non-citizen Mexicans young adults who entered the U.S. after 1987. Estimation controls for age, gender, marital status, race, month of the year, state and year fixed effects, monthly state unemployment rate and the proportion of the non-Hispanic White population with at least some college education, the proportion of Mexican adults 30 to 54 years old with at least a high school degree and resident and non-resident tuition prices. Robust and clustered standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 1.7: Estimated Effect of In-State Tuition on College Enrollment of Non-Citizen Mexican Immigrants by State (use Public University Prices)

	Age 18-20			Age 21-22		
	Overall	**Men**	**Women**	**Overall**	**Men**	**Women**
Policy (mean of ln(Tuition))	0.015	0.077***	-0.086**	0.059***	0.102***	0.012
	(0.020)	(0.025)	(0.035)	(0.016)	(0.024)	(0.027)
States that Adopted Policy by 2008						
California	0.052**	0.035	0.066*	0.025	-0.035	0.093**
	(0.025)	(0.032)	(0.038)	(0.020)	(0.022)	(0.037)
Illinois	0.007	0.106***	-0.150***	0.085***	0.175***	-0.011
	(0.029)	(0.035)	(0.051)	(0.024)	(0.033)	(0.039)
Kansas	-0.004	0.044*	-0.076**	0.022	0.048*	-0.014
	(0.020)	(0.026)	(0.033)	(0.017)	(0.027)	(0.029)
Nebraska	-0.096*	0.050	-0.296***	0.008	0.165**	-0.189**
	(0.052)	(0.064)	(0.089)	(0.049)	(0.080)	(0.082)
New Mexico	-0.011	0.016	-0.050	-0.007	-0.005	-0.021
	(0.026)	(0.032)	(0.042)	(0.022)	(0.032)	(0.039)
New York	0.010	0.099***	-0.132***	0.079***	0.156***	-0.004
	(0.027)	(0.032)	(0.046)	(0.022)	(0.031)	(0.035)
Oklahoma	-0.084*	0.020	-0.222***	-0.019	0.085	-0.157**
	(0.048)	(0.059)	(0.082)	(0.045)	(0.073)	(0.076)
Texas	0.031	0.069***	-0.035	0.054***	0.064***	0.045*
	(0.019)	(0.024)	(0.032)	(0.015)	(0.019)	(0.026)
Utah	-0.030	0.029	-0.114**	0.002	0.045	-0.060
	(0.029)	(0.035)	(0.047)	(0.026)	(0.041)	(0.044)
Washington	0.049**	0.074**	-0.003	0.062***	0.056**	0.076**
	(0.023)	(0.029)	(0.039)	(0.019)	(0.023)	(0.032)
States that Proposed Policy but not yet Implemented						
Florida	0.060**	0.046	0.064	0.038*	-0.017	0.104***
	(0.025)	(0.032)	(0.040)	(0.021)	(0.025)	(0.038)
New Jersey	-0.002	0.134***	-0.213***	0.111***	0.247***	-0.034
	(0.040)	(0.048)	(0.069)	(0.032)	(0.044)	(0.054)
States that Ban Policy*						
Arizona	0.046**	0.058**	0.015	0.046***	0.024	0.075**
	(0.021)	(0.027)	(0.034)	(0.017)	(0.020)	(0.030)
Colorado	0.020	0.044*	-0.023	0.027*	0.022	0.030
	(0.018)	(0.023)	(0.028)	(0.014)	(0.018)	(0.025)

Notes: The sample of analysis is restricted to non-citizen Mexicans young adults who entered the U.S. after 1987. Estimation controls for age, gender, marital status, race, month of the year, state and year fixed effects, monthly state unemployment rate and the proportion of the non-Hispanic White population with at least some college education, the proportion of Mexican adults 30 to 54 years old with at least a high school degree and resident and non-resident tuition prices. Estimated impact of the in-state tuition policy by state is computed as: α_3*IST+α_4*OST+α_5 where IST and OST represent the state average resident and non-resident undergraduate tuition fees for each state. Refer to Appendix C, Table C.1 for the values of average prices used. Robust and clustered standard errors in parentheses. * Refers to what would happen in those states if the ban of in-state tuition were removed. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 1.8: Estimated Effect of In-State Tuition on College Enrollment of Non-Citizen Mexican Immigrants by State (use Public Community College Prices)

	Age 18-20			Age 21-22		
	Overall	**Men**	**Women**	**Overall**	**Men**	**Women**
Policy (mean of ln(Tuition))	0.009	0.056**	-0.042	0.069***	0.117***	0.008
	(0.023)	(0.027)	(0.039)	(0.017)	(0.026)	(0.027)
States that Adopted Policy by 2008						
California	0.072***	0.063**	0.071*	0.004	-0.037*	0.045
	(0.025)	(0.031)	(0.039)	(0.020)	(0.020)	(0.037)
Illinois	0.057*	0.077**	0.027	0.065***	0.107***	0.007
	(0.029)	(0.035)	(0.052)	(0.023)	(0.033)	(0.034)
Kansas	-0.046*	0.028	-0.122***	0.068***	0.116***	0.013
	(0.025)	(0.034)	(0.038)	(0.021)	(0.030)	(0.036)
Nebraska	-0.079**	0.013	-0.170***	0.071***	0.121***	0.014
	(0.032)	(0.044)	(0.047)	(0.027)	(0.038)	(0.048)
New Mexico	-0.043	0.019	-0.106**	0.038	0.043	0.032
	(0.029)	(0.040)	(0.041)	(0.024)	(0.032)	(0.042)
New York	-0.011	0.054	-0.081	0.094***	0.176***	-0.006
	(0.031)	(0.038)	(0.053)	(0.024)	(0.036)	(0.038)
Oklahoma	-0.010	0.046*	-0.070**	0.069***	0.116***	0.010
	(0.021)	(0.027)	(0.036)	(0.017)	(0.025)	(0.027)
Texas	-0.041*	0.026	-0.110***	0.055***	0.085***	0.021
	(0.024)	(0.034)	(0.036)	(0.020)	(0.028)	(0.036)
Utah	0.025	0.063**	-0.018	0.067***	0.114***	0.008
	(0.024)	(0.029)	(0.042)	(0.019)	(0.027)	(0.028)
Washington	0.032	0.068**	-0.011	0.073***	0.127***	0.004
	(0.028)	(0.033)	(0.049)	(0.021)	(0.031)	(0.032)
States that Proposed Policy but not yet Implemented						
Florida	0.027	0.062**	-0.014	0.063***	0.104***	0.011
	(0.023)	(0.027)	(0.040)	(0.017)	(0.026)	(0.026)
New Jersey	-0.007	0.054	-0.072	0.088***	0.163***	-0.003
	(0.029)	(0.035)	(0.050)	(0.022)	(0.033)	(0.035)
States that Ban Policy*						
Arizona	0.045**	0.064***	0.017	0.045***	0.061***	0.021
	(0.020)	(0.024)	(0.035)	(0.016)	(0.021)	(0.025)
Colorado	0.046	0.075**	0.009	0.074***	0.129***	0.002
	(0.031)	(0.037)	(0.055)	(0.024)	(0.035)	(0.036)

Notes: The sample of analysis is restricted to non-citizen Mexicans young adults who entered the U.S. after 1987. Estimation controls for age, gender, marital status, race, month of the year, state and year fixed effects, monthly state unemployment rate and the proportion of the non-Hispanic White population with at least some college education, the proportion of Mexican adults 30 to 54 years old with at least a high school degree and resident and non-resident tuition prices. Estimated impact of the in-state tuition policy by state is computed as: α_3*IST+α_4*OST+α_5 where IST and OST represent the state average resident and non-resident undergraduate tuition fees for each state. Refer to Appendix C, Table C.1 for the values of average prices used. Robust and clustered standard errors in parentheses. * Refers to what would happen in those states if the ban of in-state tuition were removed. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 1.9: Estimated Effect of In-State Tuition for Non-Citizen Immigrants

Panel A: Public University Prices	**Age 18-20**		**Age 21-22**	
	Latino (not Mexican)	**Non Latino**	**Latino (not Mexican)**	**Non Latino**
Policy	-0.004	-0.082*	0.027	-0.110**
	(0.046)	(0.043)	(0.051)	(0.047)
Policy for Men	0.027	0.060	0.030	-0.150**
	(0.064)	(0.062)	(0.081)	(0.071)
Policy for Women	-0.047	-0.224***	-0.009	-0.096
	(0.067)	(0.059)	(0.065)	(0.062)
Panel B: Public Community College Prices				
Policy	0.015	-0.059	0.031	-0.126**
	(0.045)	(0.047)	(0.055)	(0.051)
Policy for Men	0.007	0.032	0.017	-0.133*
	(0.064)	(0.071)	(0.089)	(0.079)
Policy for Women	0.010	-0.167***	0.027	-0.148**
	(0.066)	(0.063)	(0.061)	(0.064)

Notes: The sample of analysis is restricted to non-citizen immigrants who entered the U.S. after 1987. Estimation controls for age, gender, marital status, race, month of the year, state and year fixed effects, monthly state unemployment rate and the proportion of the non-Hispanic White population with at least some college education, the proportion of Mexican adults 30 to 54 years old with at least a high school degree and resident and non-resident tuition prices. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 1.10: Estimated Effect of In-State Tuition for U.S. Citizens

Panel A: Public University Prices	**Age 18-20**		**Age 21-22**	
	U.S. Born Overall	**U.S. Born (Mexican Parents)**	**U.S. Born Overall**	**U.S. Born (Mexican Parents)**
Policy	0.001	0.103***	0.005	-0.009
	(0.005)	(0.025)	(0.007)	(0.032)
Policy for Men	0.001	0.082**	-0.003	-0.068
	(0.008)	(0.034)	(0.010)	(0.046)
Policy for Women	-0.001	0.126***	0.014	0.051
	(0.008)	(0.035)	(0.010)	(0.045)
Panel B: Public Community College Prices				
Policy	-0.014**	0.116***	0.013*	-0.001
	(0.006)	(0.032)	(0.008)	(0.041)
Policy for Men	-0.015*	0.052	0.010	-0.054
	(0.008)	(0.044)	(0.011)	(0.061)
Policy for Women	-0.014*	0.182***	0.016	0.057
	(0.008)	(0.046)	(0.011)	(0.056)

Notes: Estimation controls for age, gender, marital status, race, month of the year, state and year fixed effects, monthly state unemployment rate and the proportion of the non-Hispanic White population with at least some college education, and resident and non-resident tuition prices. Robust and clustered standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Chapter 2

Love in the Time of Taxation

2.1 Introduction

Over the past four decades the defining characteristics of the typical American family have changed considerably. Marriage rates are declining rates while divorce and cohabitation rates are increasing. The divorce rate in the United States began rising during the 1960s and reached the highest peak during the late '70s and early '80s when changes in divorce related legislation were adopted by most states. Since then, the national per capita divorce rate has declined steadily. According to National Center for Health Statistics (NCHS), in 2007 the annual divorce rate has reached 3.6 divorces for every 1000 people. At the same time, the marriage rate has been steadily decreasing while cohabitation has been increasing during this period.

These changes in the American family dynamics have attracted many scholars in examining the determinants of those changing trends away from marriage. The majority of empirical studies rely on demographic, economic, and socio-cultural factors in explaining those changes in the family life. Age and racial distributions, female-to-male ratios, fertility rates, male and female potential earnings, gender roles, as well

as acceptability of divorce constitute only a few of the most used determinants in explaining the marriage termination decision.

The role of government's actions on the changing family trends also attracted scholars' attention. Most of the current literature consists of studies that analyze how households' behavioral decisions are affected by governmental policies and specific welfare programs. Recent studies concentrate on the effect of Earned Income Tax Credit (EITC), Social Security, the income tax code, as well as child support enforcement on individuals' incentives to marry or to leave the marriage. The existing welfare programs, such as Temporary Assistance to Needy Families (TANF) are believed to reduce the cost of leaving the family since the government pays a part of the tab. Previous empirical studies find that welfare assistance programs, such as AFDC, offer great incentives for marriage delays. They increase the marriage termination rates and the percentage of single parent families, as well as encourage cohabitation and out-of-wedlock births.[1]

Building on the previous studies, this paper supplements the existing literature by providing an empirical analysis of the effect of tax treatment of married couples and single individuals on the timing of divorce decision. Given the structure of the tax system in which the family's yearly tax liability is computed based on the family's status as of the last day of the tax year, couples might have different incentives regarding the decision of when to terminate their marriage. Variation in incentives regarding the divorce timing depends on the distribution of earnings between the partners. Thus, for a given level of earnings the tax liability will have different effects on various types of families. For instance, couples in which partner's earnings are similar will face a greater penalty from staying married and filing the joint taxes than

[1]Moffitt (1992) literature review on the incentive effects created by the welfare system in the U.S provides a great detailed description of the different incentives that result from the governmental programs.

couples in which the earnings discrepancy between partners is significant. If both spouses earn about the same amount of money, then they end up in a higher tax bracket and face higher taxes if they file as married. To the extent that differences in tax liability are significant, the couple's behavior might adjust in order to offset the marriage penalty associated with a later divorce (i.e. a divorce that takes place at the beginning of a new tax year). In short, the paper analyzes whether the tax burden of being married versus being single affects behavior by having an effect on the timing of divorce and by creating incentives for accelerating the marriage termination by end of the year. While the so-called marriage penalty was eliminated in 2003, this paper analyzes the impact of the penalty by stressing the fact that this type of policy can affect the timing of divorce.[2] This reinforces the conclusions of other researchers that family choices are driven by government policy.

2.2 Literature Review

The previous empirical literature on marriage instability and disruption is vast and ranges from the effect of financial expectations and surprises on marital stability to the behavioral responses, as well as timing of decisions, to taxes and potential welfare benefits. For instance, Weiss and Willis (1997) find that financial surprises (i.e. changes in the predicted earning capacity of either spouse) have a negative effect on the divorce hazard. According to their results, an unexpected increase in husband's earning capacity reduces the likelihood of marriage termination.

Building on previous theoretical models in which an increase in the expected transfers will increase the probability of divorce, empirical studies conducted by Hoff-

[2]The Jobs and Growth Tax Relief Reconciliation Act of 2003 eliminated the impact of the marriage penalty by equalizing the standard deduction for singles and married couples and increasing the end point of the 15 percent tax bracket for married couples filing jointly.

man and Duncan (1995), as well as Moffitt (1992) find that conditional governmental welfare programs do increase the likelihood of marriage termination and the formation of the female headed households. However, even though both studies find significant results, the authors conclude that the magnitude of the welfare programs is really small and cannot explain the changing trends in the typical American family (i.e. the falling marriage rates and the increasing number of female headed households).

The tax system in the United States where the household constitutes the unit of taxation gives rise to the marriage penalty. The marriage penalty implies that married couples have a lower after tax income when married than when they are two single individuals. Based on previous literature, marriage penalty deters couples from getting married and encourages couples to cohabit and delay their marriage decision.[3] On this note, in their empirical study, Sjoquist and Walker (1995) find that as the potential marriage penalty increases there are fewer couples who marry at the end of the year relative to the beginning months of the next year.[4]

Similar to Sjoquist and Walker, Whittington and Alm (1996) find that there exists a positive relationship between the probability of delaying marriage from the last quarter of one year to the first quarter of the next year and the potential marriage penalty faced by the couple if they marry in the current tax year. Although the effect is small, the couple decides when to marry based on the comparison of the tax burden of being married versus being single. For an average marriage penalty of $300 in 1985, the estimated effect of income tax decreased the likelihood of marriage by 2% in 1985. Additionally, the authors also find that in the presence of a marriage penalty, nearly 5% of couples decided to delay the marriage. Using the total number of marriages as

[3]Cohabitation is likely to arise as undeclared cohabitation is difficult to be proved.

[4]Note that the tax year starts on January 1st and ends on December 31st. Thus, couples that do marry before the end of the year need to file their taxes as either "married filing jointly" or "married filing separately." However, there is no advantage for filing separately.

a base level, at an average of 2.5 million marriages each year the income tax led to a delay of 50,000 marriages.

In a later empirical study, Whittington and Alm (1997), using data from the Panel Study of Income Dynamics (PSID) find that couples do indeed respond to tax incentives in their decision to divorce and conclude that federal individual income taxes play some role in divorce decisions of men and women. Even though the estimated effect of taxes is small the authors find that women are more likely than men to terminate the marriage given that married women in their sample face higher taxes than unmarried women. This result is plausible since joint filing imposes a higher tax on the secondary earner. Similarly, Clarke and Strauss (1996) find that the marriage taxes have a greater impact on marriage termination than on marriage formation.

Compared to the previous mentioned papers, the current study uses a different methodical approach in estimating the impact of the marriage tax penalty on the divorce decision. This paper estimates the impact of tax incentives on the timing decision of divorce, specifically in the choice between divorce in the last quarter of the year versus the first quarter of the next. The estimation period, 1980-1996, represents a time in which the family structure and women decisions of entering the labor market were significantly affected by different tax reforms that occurred during the considered 1980-2004 time span.[5] With more married women entering the labor market, the family's earnings distribution is altered and the earnings discrepancy among partners is reduced. Thus, to the extent that the different tax treatment of married couples versus single individuals has a significant effect on the likelihood of divorce and the timing decision, the current paper aims to quantify a more significant effect of the tax liability on this type of behavioral decisions.

[5]Eissa (1995) finds that the introduction of the Tax Reform Act of 1986 resulted in a 19 percent increase in the labor force participation by top income married women.

2.3 Theoretical Framework

In the classical framework of marriage formation developed by Becker (1991), marriage occurs as a partnership of joint production and consumption in which the couple maximizes the benefits from both market and non-market (children and companionship) activities. In this framework, the higher the value of marriage, the less likely it is that the marriage will dissolve and investments in the relationship provide a greater marriage value. On the other hand, when the value of marriage falls below the sum of the husband's and wife's outside opportunities, the marriage is going to terminate. In other words, a couple will terminate their marriage when the share of commodities produced in the household is less than the share produced by each person if single (i.e. $Z^m \equiv Z_m^m + Z_f^m \leq Z_m^s + Z_f^s$).

For the married couple, the household production of commodities, Z^m, is a function of time spent in housework by each spouse, H_m and H_f, and market goods, X (i.e. $Z = Z(H_m, H_f, X)$). Each spouse is present in the labor market and faces a personal time constraint. L_m and L_f represent the amount of time spend in employment and T represents the total time endowment. For each spouse: $L_i + H_i = T$ for $i = m,\ f$.

The optimum amount of household consumption must be consistent with the following budget constraint:

$$P * X = T * w_m * (T - H_m) + w_f * (T - H_f). \tag{2.1}$$

For simplicity I assume a fixed proportion functional form for the household production of commodities: $Z^m = min\left\{\frac{X}{a}, \frac{H_f}{b_f}, \frac{H_m}{b_m}\right\}$. Thus, the demand for inputs is given by $X = aZ$, $H_m = b_m Z^m$, and $H_f = b_f Z^m$ where a represents the amount of market good necessary to produce one unit of the married household good Z^m, and b_m and b_f represent the time share spend in housework by each spouse. Given this functional

form the optimum amount of Z for the married couple is given by:

$$Z^m = \frac{T * (w_m + w_f)}{P * a + w_f b_f + w_m b_m}. \tag{2.2}$$

The numerator represents the total income of the couple, while the denominator incorporates the total price of the Z commodity: the market price given by aP and the time, or opportunity cost given by $w_f * b_f + w_m * b_m$. Normalizing the market price and the total available time to unity, the optimal composite good of the married couple reduces to:

$$Z^m = \frac{(w_m + w_f)}{a + w_f b_f + w_m b_m}. \tag{2.3}$$

When the couple decides to terminate the marriage, for the single individual the optimum amount of commodities is given by:

$$Z_i^s = \frac{w_i}{a + w_i * b_i} \, for \, i = m, \, f. \tag{2.4}$$

The different treatment of taxation faced by a married couple is included in the model as a way of establishing the conditions under which a married couple decides to split. In the presence of income taxes, for the married couple that files a joint return the composite good is given by:

$$Z^m = \frac{(w_m + w_f)(1 - \tau^m)}{a + (w_f b_f + w_m b_m) * (1 - \tau^m)}, \tag{2.5}$$

where τ^m represents the tax faced by the married couple.

For the individuals that terminate their marriage by the end of the fiscal year consumption of the composite good is affected by taxes as follows:

$$Z_i^s = \frac{w_i(1 - \tau^s)}{a + w_i b_i (1 - \tau^s)} \, for \, i = m, \, f, \tag{2.6}$$

where τ^s represents the single tax rate faced by each person after divorce. Holding all other factors constant, for any given tax rates (τ^m and τ^s), couples are more likely

to terminate the marriage when the consumption of each person as single individuals, Z^s is greater than the share that each partner receives from the married output Z^m.

With respect to the timing of the divorce decision, assuming that the couple decides to terminate their marriage, then the decision of whether to divorce in period t relative to period $t+1$, strictly depends on the difference between the two different tax rates. If the couple divorces in period t, then each person will get Z^s in period $t+1$. On the other hand, if the couple terminates the marriage in period $t+1$, then each one gets Z^s taxed at the marriage tax rate τ^m. Thus, a lower marginal tax rate on a divorced individual relative to the tax rate faced by the couple (i.e. τ^s ¡ τ^m) tends to decrease the tax liability and thus create beneficial incentives for early marriage termination.

2.4 Data and Empirical Models

The empirical estimation uses data from the Panel Study of Income Dynamics (PSID). The PSID is a longitudinal survey that started with 4800 families in 1968 and it has grown to more than 7000 families by 2001. The longitudinal nature of the survey, allows me to follow individuals and their marital status. Using the information from the 1985 marital history I construct the data sample that facilitate the testing of the hypothesis that different tax treatments between married couples and single individuals have a significant effect on the likelihood to divorce and on the timing decision of divorce. I use the time frame 1980 through 1996. The data available for my analysis ends in 1996 because starting with the year 1997 the PSID survey is conducted on a biennial basis and thus income data needed for tax computation is not available.[6]

[6]Given the biennial feature of PSID after 1996, I am unable to get income data for the following years: 1997, 1999, 2001, 2003 and 2005. Although surveys were conducted during those years, it

This time frame, hoverer, allows me to incorporate substantial variation in the marginal tax rates because there have been significant changes in the federal tax policy over this period. The Economic Recovery Tax Act of 1981 (ERTA), the Tax Reform Act of 1986 (TRA), The Omnibus Budget Reconciliation Act of 1990 and 1993 (OBRA) constitute some of the major tax legislation acts that resulted in major changes in the federal income tax. Rate schedules changed in 1981, 1986, 1990, 1993 and 2001. ERTA (1981) reduced the marginal income tax rates in the U.S. by 25% over three years. The top rate was reduced from 70% to 50% while the bottom rate dropped from 14% to 11%. These tax provisions become fully phased in 1983. The acts also introduces new deductions for two-earner married couple. The lower-paid spouse is allowed a 10 percent tax deduction on income up to $30,000, for a maximum deduction of $3,000 and it reduces the marriage penalty. The secondary-earner deduction were eliminated by the Tax Reform Act of 1986. Additionally the top tax rate was lowered from 50% to 28% while the bottom rate was raised from 11% to 15%. OBRA (1993) icnreases the tax rates for high earners from 31% to 36%. Additionally, this act had an impact on marriage penalty as provision of Earned Income Tax Credit (EITC) was extended. The EITC is structured so that it diminishes as family income increases and thus it can create incentive to not have an employed spouse in the home in order to have a lower family income.

Empirical estimation of the effect of tax treatment on the timing decision is performed using a restrictive sample that consists only of couples that decide to terminate their marriage either in the last quarter (Q4) of the year t or the first quarter (Q1) of the next year $(t+1)$. Out of all 1628 divorced couples in the sample from 1980 to 1996, 422 couples got a divorce in the first quarter and 401 couples terminated their marriage in the fourth quarter. The idea is that marital choices,

should be noted that the surveys record income from the previous year.

at least in some cases, are flexible enough to adjust the timing of divorce across the window of the last quarter of one year and the first quarter of the next.

If the divorce takes place at the end of year t instead of the beginning of year $t+1$, then each individual will file taxes as single and face the single tax rates. On the other hand, if the couple divorces at the beginning of the next year, then they file a joint return for period t.[7] If the couple chooses to divorce in Q1 of year $t+1$ and file jointly for year t, the tax liability is born jointly within the marriage. If the couple chooses to divorce in Q4 of year t, I assume that the couple minimizes the tax liability of the combined single returns by allocating deduction across the two returns.

In this sense, I define a relative price variable that measures the marriage-tax penalty. It is the ratio of the taxes the couple would pay filing singly and the taxes that they would pay filing jointly for year t. Again the choice is to divorce in Q4, year t versus Q1, year $t+1$ based on the tax liabilities for year t. Let this marriage-tax price be indicated by:

$$T = \frac{T_s^h + T_s^w}{T^j}\,, \tag{2.7}$$

where T^j is the the joint-filing tax liability, and T_s^h is the tax liability for the husband filing separately, and T_s^w is the tax liability for the wife filing separately.The model suggests that as T goes down, it becomes less costly to stay married so more people are likely to divorce in Q4.

For the given sample, I compute the marriage-tax price under two different scenarios. First, I compute a tax liability ratio in which the spouse with the higher income gets the dependents. Additionally, allowing for the spouse with the higher

[7]Divorced couples can still file as "married filing separately". However, I assume that individuals are rational and act in their best interest. Thus, I believe that is safe to assume that they will each agree to file under "married filing jointly" status since the separate filing is less favorable.

income to get the dependents and also to get the "Head of Household" filing status, I compute an additional marriage-tax relative price.[8]

Figure 2.1 presents the time trends for two divorce ratios and the computed marriage-tax price. There are 2 divorces ratios that I compute from the marriage file in PSID. First divorce ratio is the ratio of divorces taking place in the last quarter of the year t to the total number of divorces taking place in the last quarter of year t plus the divorces taking place in the first quarter of year *t+1* (i.e. $\frac{Q_t}{Q_t+Q_{t+1}}$). The second divorce ratio is computed as the ratio of total divorces taking place in the last quarter of the year t to the total number of divorces taking place in the first quarter of year *t+1* (i.e. $\frac{Q_t}{Q_{t+1}}$). If the different tax treatment of married couples versus single individuals has an impact on the timing decision of divorce, then we should observe that the ratio of couples accelerating the divorce decision is increasing at the same time the marriage-tax price decreases.

The empirical model developed in this paper investigates the empirical magnitude of the effect of tax savings on a couple's decision to accelerate divorce into period t rather than postpone it until period $t+1$. Parametric estimation for the timing decision is modeled by the following logit model:

$$Pr[D_i = 1|Z_{1j}, ..., Z_{kj}] = \frac{1}{1 + exp(-\sum_{i=1}^{k} \beta_i^0 Z_{ij})}\,, \tag{2.8}$$

where $D_i = 1$ represents the couple's decision of getting a divorce in Q4 of year t. The vector Z_i incorporates variables that also may affect the timing of the divorce decision for couple i. There are a number of things that are considered.

The literature on divorce has included the number of children under the age of

[8]According to the IRS, a person can claim the "Head of Household" filing status if the following criteria are met: the person is unmarried, there are dependents that live in the same house, and the person paid more than half the cost of keeping up the home.

five as a negative factor on divorce. While the literature has looked at divorce overall, small children may influence the timing of divorce around the turn of the year. Parents may wish to have one more Christmas together for the sake of the children. Thus, I predict that the presence of small children should be correlated with first quarter rather than fourth quarter divorces. Another, similar factor is religion. If couples are of the same religion, the holiday season and the associated religious ceremony may cause couples to postpone divorce into the new year.

Education and the length of the marriage may also influence the choice. I expect that more highly educated couples will be more cognizant about the relative tax cost of a late divorce compared to an early one. Also, I imagine that for marriages that have lasted a long time, the divorce decision is more flexible.

Finally, I consider the effect of income. Income level reflects the level of earnings for each spouse during the entire year. Irrespective of which quarter the divorce takes place, income is recorded for year t since tax liability is computed based on the level of income earned in that year.[9] I have information on the income of both spouses and this is an important part of the choice set that I am analyzing. First, higher combined income means that more money is at stake in the marriage-tax penalty. So I would expect that couples with high combined income to be more sensitive to the tax-cost of delaying divorce. However, the relative income of one spouse to the other is also a factor. In the limit, for marriages in which the wife does not work (80 percent in my sample) there is no marriage tax.

[9]Tax liability for a couple divorcing in last quarter is based on earned income in that year, while tax liability for couple terminating marriage in the first quarter of next coming year is still based in income earned in the previous year.

2.5 Results

Summary statistics for the relevant control variables are presented in Table 2.1. Although the original data sample included 823 couples that divorce in the first or the fourth quarter, the empirical estimation is based on a reduced sample of 548 couples when I control for the level of education for the primary earner. This sample is further reduced to 371 couples when I control for the combined level of education of the partners because of significant amount of missing observations for the spouse's education. The significant reduction in sample size arises from the fact that I exclude all couples with missing income information, as well as all couples for which the computed tax liability of the couple that files a joint return, or the tax liability of each partner filing as single is zero such that the relative marriage tax price cannot be computed.[10] Missing observations or unrecorded level of education are replaced by the minimum level of education (i.e. 4 years of education).

The current study analyzes the magnitude of the effect of tax savings on a couple's decision to accelerate divorce within the framework of a logit regression where the dependent variable is 1 if the couple accelerates the divorce into period t and 0 otherwise (i.e. postpone the divorce until $t+1$). The current sample consists of both types of couples and Table 2.2 provides a summary description of the income and tax related characteristics for the couples that face a marriage penalty, as well as for the couples that find it in their best interest to stay married and postpone the divorce decision. Given the marriage-tax price, we can see that there is a marriage penalty for those couples that have $T < 1$ and a marriage subsidy for those with $T > 1$. Based on the characteristics from Table 2.2, couples that face a penalty from

[10]There are 247 couples for which the relative marriage tax penalty cannot be computed as income information is unavailable for both the husband or the wife. Moreover, 19 observations are dropped due to missing values for the level of education of the primary earner.

postponing the divorce are couples in which on average the wife (or the secondary earner of the household) has significantly higher income. This fact is consistent with the pre existing findings that the closer the earnings of the partners are the larger the marriage penalty is.

The constructed sample for the empirical analysis consists of couples that have a combined income that ranges from a low $273 to a high $512,325. For some of the couples in the sample the marriage-tax price is significantly large. Table 2.3 presents the six couples for which the marriage-tax price is such that the joint tax liability of the couple is significantly lower than the tax liability when filing singly. More precisely, the relative price of the first couple included is 88% larger than the price faced by the couple with the prior largest price (i.e. T=9.2). These couples benefit from a large marriage subsidy and at least one of the spouses has an incentive to postpone the divorce and minimize his or her tax liability. In my estimation, I first look at the impact of the tax liability when these couples are excluded from the sample as they are mostly outliers and their inclusion might lead to inconsistent results. I also perform an additional analysis in which these couples are included in the sample.

For the given sample considered, Table 2.4 reports estimates for different specifications considered while Table 2.5 reports the marginal effects evaluated at the means of the relevant independent variables. In Table 2.5, columns 1, 3, 5 and 7 report the estimates of a simple linear probability model while logit estimates are reported in columns 2, 4, 6 and 8. It should be noted that estimations in Panel a use the level of education for the primary earner as a control variable while estimations in Panel b control for the combined level of education in the couple. Due to a significant amount of missing observations for the spouse's education the analyzed sample is significantly smaller.

The main variable of interest, the marriage-tax relative price, is statistically

significant across all models. The computed estimates provide some evidence that individuals do respond to changes in the marriage-tax penalty and as the relative ratio goes down then the relative value of divorcing early goes up and more people are likely to divorce in Q4. This effect is present regardless of the two different scenarios considered in computing marriage-tax relative price. However, the results show that the effect is slightly larger when including the possibility of filing as "Head of Household". Using the level of education for the primary earner, the linear probability model suggests that 100 percent increase in the relative marriage-tax price reduces the probability of accelerating the divorce into the last quarter by 1.7 percent. Allowing for "Head of Household" reduces the probability of accelerating divorce by 2 percent. Similar effects, but of slightly lower magnitude, are present when estimation controls for the combined level of education in the couple.

Table 2.5 records the marginal effects computed at the mean of the independent variables for the logit framework. For the significant coefficients mentioned above, the marginal effects are precisely estimated and have low standard errors. Based on those computed effects, on average 100 percent increase in the relative marriage-tax price is going to reduce the probability of accelerating the divorce by 3.2 percent when the price is computed as in "Scenario a" and it is going to decrease the probability of accelerated divorce by 3.7 percent when the price is computed as in "Scenario b". Similar effects are reported when the combined level of education is controlled for.

Regarding the estimated effect for the number of children, the duration of the marriage, the religious match, and the level of education, those variables turn out not to be significant in any of the specifications considered. The level of combined income for the two spouses has a significant effect on the probability of accelerating the divorce regardless of the way the marriage-tax price is computed but only when the linear probability framework is considered. On a similar note, the estimated

coefficient for the income ratio is statistically significant in most of the cases and the signs of this estimate indicate that the likelihood of getting a divorce by the end of year t decreases as the income ratio increases (i.e. as the income of the secondary earner increases).

For the main variable of interest, including the six couples that face a significant marriage subsidy such that the primary earner has a great incentive to postpone the divorce decision, reduces the impact of the marriage tax price such that the probability of accelerating divorce is reduced. These results are present in Table 2.6, Panel B. The probability of accelerating the divorce when the relative marriage tax price doubles decreases by 1.1 percent when the price is computed as in Scenario a and by 1.7 percent when the relative price is computed under the assumptions in Scenario b.

As couples with larger income, a longer marriage, and a higher level of education are more likely to accelerate the divorce decision I analyze the impact of the relative marriage tax price while allowing for this price to be directly related to the level of income, education and marriage duration. The main estimates presented in Table 2.7 are computed by allowing for different specification (i.e. price interacted with income, education and marriage duration). The estimated effect for each interaction is computed such that the effect of one variable depends on the magnitude of the other independent variable that is interacted with (i.e. the effect of the relative tax price depends on the level of income). Computed at the mean level of each interacted variable, results confirm that income, marriage duration and education together with the marriage penalty have a significant effect on the decision of accelerating the marriage dissolution. For the couples with an average level of combined income, an increase in the relative marriage tax price reduces the probability of divorcing in the last quarter by 6.2 percent. Similar impact is present for couples with an average level of income and education while the probability of accelerating the divorce falls

to 7.6 percent when I also include the interaction between tax price and marriage duration. Allowing for interaction effects also solves the problem of the potential outliers. Results suggests that for couples with average level of combined income an increase in the relative marriage tax price reduces the probability of accelerating divorce by 4 percent when estimation includes the six couples that face a significantly large marriage subsidy. Similar effects are present when I control for the spouses' combined level of education.

2.6 Conclusion

The results of the current paper provide additional evidence that marriage penalty does matter and does induce changes in individuals' behavior. The current study shows evidence that the marriage-tax penalty had large and significant effects in the timing decision of the divorce. It created significant incentives for early marriage termination.

The estimation results of this study provide evidence that individuals do respond to tax incentives and changes in the marriage tax penalty alters the relative value of divorcing early. Estimation results suggest that one percent increase in the relative marriage-tax price is going to reduce the probability of accelerating the divorce by 3.2 percent when the price is computed under the assumption that the spouse with the higher income gets the dependents. The effect is slightly larger (i.e. 3.7 percent) when the relative marriage-tax price is computed under the assumption that the spouse with the higher income gets the dependents and also gets the "Head of Household" filing status.

In short, when the relative marriage tax price goes down it becomes less costly to stay married so couples are more likely to accelerate their divorce and terminate the

marriage by the end of the year. This effect is present regardless of the two different scenarios considered in computing marriage-tax relative price, and the results show that the effect is slightly larger when including the possibility of filing as "Head of Household".

Table 2.1: Summary Statistics

	Obs	Mean	Std. Dev	Min	Max
Divorce	545	0.433	0.496	0	1
Combined Income	545	32548.92	31445.94	273.11	512325
Income Ratio	545	0.061	0.137	0	0.5
Children (Under 5)	545	0.514	0.664	0	4
Religion Match	545	0.422	0.494	0	1
Education (Primary Earner)	545	10.536	4.142	4	17
Education (Combined)	374	22.211	6.564	4	34
Exemptions	545	1.728	1.205	1	7
Tax Liability Ratio a	545	0.631	2.954	-38.844	9.934
Tax Liability Ratio b	545	0.513	3.245	-38.844	9.934

Notes: The time frame is 1980 through 1996. Income and tax related values are in 1996 dollars. The variable Tax Liability Ratio a refers to the scenario in which the primary earner gets the dependents. Similarly, the variable Tax Liability Ratio b refers to the scenario in which the primary earner gets both the dependents and the "Head of Household" filing status. Due to a significant amount of missing observations for the spouse's education the analyzed sample is significantly smaller when the educational level considered is the combined level of education. $IncomeRatio = \frac{Secondary\,Earner's\,Income}{Combined\,Income}$.

Table 2.2: Distribution of Income and Tax Related Variables by Marriage-Tax Price

Variable	Obs	Mean	Std. Dev.	Min	Max
Panel a: Tax Liability Ratio a<1					
Tax Liability Ratio a	220	-0.714	4.131	-38.844	0.996
Wife Income	220	6133.56	10847.41	0.00	72658.74
Head Income	220	20619.17	13362.51	409.67	130479.80
Combined Income	220	26752.74	22194.19	1638.68	179409.40
Joint Tax Liability	220	2165.94	5186.66	-2201.91	44617.26
Head Tax Liability	220	2484.85	3206.32	0.00	33778.98
Wife Tax Liability	220	658.12	1675.77	-283.62	15594.01
Panel b: Tax Liability Ratio a>1					
Tax Liability Ratio a	290	2.440	6.824	1.015	106.350
Wife Income	391	2428.04	18980.46	0.00	349831.00
Head Income	391	28112.85	25668.31	0.00	162494.00
Combined Income	391	30540.89	35339.82	0.00	512325.00
Joint Tax Liability	391	3782.91	10018.48	-1047.38	175227.50
Head Tax Liability	391	4819.84	6637.87	-318.29	45997.19
Wife Tax Liability	391	505.87	5993.67	0.00	116524.60
Panel c: Tax Liability Ratio b<1					
Tax Liability Ratio b	238	-0.796	4.434	-38.844	0.993
Wife Income	238	5897.55	11001.34	0.00	72658.74
Head Income	238	21577.53	13626.17	409.67	130479.80
Combined Income	238	27475.07	22031.87	1638.68	179409.40
Joint Tax Liability	238	2315.96	5118.01	-2201.91	44617.26
Head Tax Liability	238	2678.31	3232.12	0.00	33778.98
Wife Tax Liability	238	651.37	1735.87	-283.62	15594.01
Panel d: Tax Liability Ratio b>1					
Tax Liability Ratio b	272	2.486	7.088	1.007	107.110
Wife Income	373	2399.81	19242.44	0.00	349831.00
Head Income	373	27862.98	26141.75	0.00	162494.00
Combined Income	373	30262.79	35950.91	0.00	512325.00
Joint Tax Liability	373	3765.21	10224.72	-1047.38	175227.50
Head Tax Liability	373	4809.08	6773.49	-318.29	45997.19
Wife Tax Liability	373	502.83	6115.22	0.00	116524.60

Notes: The time frame is 1980 through 1996. Income and tax related values are in 1996 dollars. Tax Liability Ratio a refers to the scenario in which the primary earner gets the dependents. Similarly, the variable Tax Liability Ratio b refers to the scenario in which the primary earner gets both the dependents and the "Head of Household" filing status. Tax Liability Ratio a<1 and Tax Liability Ratio b<1 suggest that the couple faces a marriage penalty. Tax Liability Ratio a>1 and Tax Liability Ratio b>1 suggest that the couple gets a marriage subsidy.

Table 2.3: Income and Tax Related Values for Marriage-Tax Price Possible Outliers

Tax Liability Ratio a	Wife Income	Head Income	Combined Income	Joint Tax	Head Tax Liability	Wife Tax Liability
17.28245	0	19936.97	19936.97	49.48799	1985.39	0
22.18644	0	20528.15	20528.15	38.24718	2066.32	0
22.18644	0	20528.15	20528.15	38.24718	2066.32	0
22.18644	0	20528.15	20528.15	38.24718	2066.32	0
24.18182	0	15385.8	15385.8	17.81513	1402.537	0
106.3504	0	9286.014	9286.014	-20.17353	382.1103	0

Notes: The time frame is 1980 through 1996. Income and tax related values are in 1996 dollars. Those are the five couples for which the marriage-tax price is significantly large.

Table 2.4: Regression Results for the Probability to Divorce in the 4th Quarter

Panel a: Estimated Coefficients with Education of Primary Earner				
	(1)	(2)	(3)	(4)
	OLS	Logit	OLS	Logit
Children (under 5)	0.043	0.18	0.04	0.175
	-0.032	-0.133	-0.032	-0.134
Religion Match	-0.021	-0.092	-0.022	-0.099
	-0.043	-0.181	-0.043	-0.182
Education (Primary Earner)	0.007	0.027	0.007	0.027
	-0.005	-0.023	-0.005	-0.023
Length	0	0.002	0	0.002
	0	-0.002	0	-0.002
Combined Income (ln)	0.042*	0.185*	0.043*	0.196*
	-0.025	-0.11	-0.025	-0.111
Income Ratio	0.183	0.723	0.185	0.712
	-0.167	-0.688	-0.166	-0.688
Tax Liability Ratio a	-0.017**	-0.082**		
	-0.007	-0.037		
Tax Liability Ratio b			-0.020***	-0.114***
			-0.006	-0.041
Constant	-0.098	-2.561**	-0.105	-2.640**
	-0.26	-1.129	-0.259	-1.141
R Square /Pseudo R Square	0.0270	0.0206	0.0343	0.0275
Obs	548	548	548	548

Panel b: Estimated Coefficients with Combined Education				
	(5)	(6)	(7)	(8)
	OLS	Logit	OLS	Logit
Children (under 5)	0.069*	0.289*	0.066*	0.283*
	-0.037	-0.156	-0.037	-0.157
Religion Match	-0.015	-0.066	-0.016	-0.073
	-0.053	-0.218	-0.053	-0.219
Education (Combined)	0.004	0.018	0.004	0.018
	-0.004	-0.017	-0.004	-0.017
Length	0.001	0.003	0.001	0.003
	-0.001	-0.002	-0.001	-0.002
Combined Income (ln)	0.036	0.155	0.037	0.161
	-0.031	-0.133	-0.031	-0.134
Income Ratio	-0.14	-0.6	-0.135	-0.601
	-0.257	-1.064	-0.256	-1.065
Tax Liability Ratio a	-0.015**	-0.073*		
	-0.007	-0.039		
Tax Liability Ratio b			-0.018***	-0.100**
			-0.007	-0.042
Constant	-0.077	-2.438*	-0.085	-2.502*
	-0.304	-1.301	-0.303	-1.312
R Square /Pseudo R Square	0.0320	0.0242	0.0394	0.0250
Obs	371	371	371	371

Notes: The time frame is 1980 through 1996. Income and tax related values are in 1996 dollars. Standard errors in parentheses. $IncomeRatio = \frac{Secondary\ Earner's\ Income}{Combined\ Income}$. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 2.5: Marginal Effects for the Probability to Divorce in the 4th Quarter Computed at the Mean of the Relevant Independent Variables

Panel a: Estimated Elasticities with Education of Primary Earner

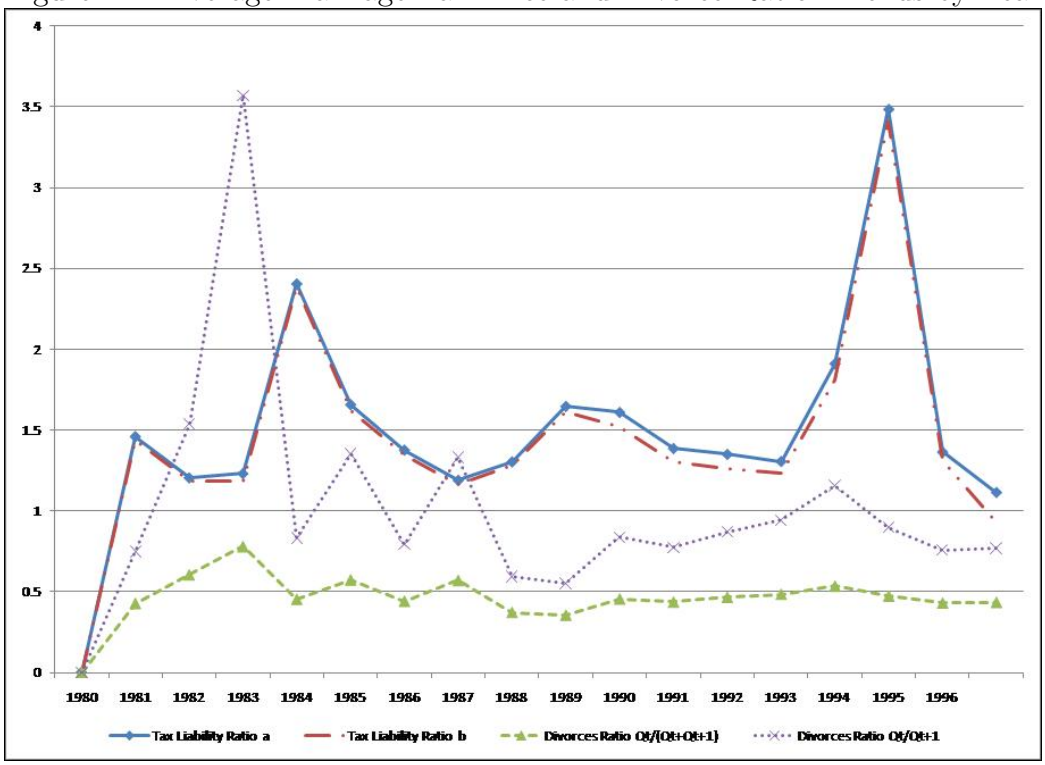
		(2)		(4)	
	Mean	m.e.	s.e.	m.e.	s.e.
Children (under 5)	0.511	0.052	(0.038)	0.050	(0.039)
Religion Match	0.422	-0.022	(0.043)	-0.024	(0.043)
Education (Primary Earner)	10.558	0.163	(0.135)	0.160	(0.135)
Length	62.582	0.060	(0.072)	0.058	(0.072)
Combined Income (ln)	10.076	1.054*	(0.629)	1.111*	(0.635)
Income Ratio	0.061	0.025	(0.024)	0.024	(0.024)
Tax Liability Ratio a	0.694	-0.032**	(0.015)		
Tax Liability Ratio b				-0.037***	(0.013)

Panel b: Estimated Elasticities with Combined Education

		(6)		(8)	
	Mean	m.e.	s.e.	m.e.	s.e.
Children (under 5)	0.523	0.083*	(0.045)	0.082	(0.045)
Religion Match	0.426	-0.016	(0.051)	-0.017	(0.051)
Education (Combined)	22.189	0.220	(0.210)	0.226	(0.210)
Length	70.415	0.119	(0.095)	0.119	(0.095)
Combined Income (ln)	10.007	0.857*	(0.737)	0.890	(0.743)
Income Ratio	0.033	-0.011	(0.019)	-0.011	(0.019)
Tax Liability Ratio a	0.575	-0.023*	(0.012)		
Tax Liability Ratio b				-0.023***	(0.010)

Notes: The time frame is 1980 through 1996. Income and tax related values are in 1996 dollars. Standard errors in parentheses. m.e stands for marginal effect; s.e stands for standard error. Marginal effects are computed at the reported means. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Figure 2.1: Average Marriage Tax Price and Divorce Ratio: Trends by Year



Notes: Tax Liability Ratio a refers to the scenario in which the primary earner gets the dependents. Similarly, the variable Tax Liability Ratio b refers to the scenario in which the primary earner gets both the dependents and the "Head of Household" filing status. The marriage-tax price is computed as: $T = \frac{T_s^h + T_s^w}{T^j}$. There are 2 divorces ratios that I compute from the marriage file in PSID. First divorce ratio is the ratio of divorces taking place in the last quarter of the year t to the total number of divorces taking place in the last quarter of year t plus the divorces taking place in the first quarter of year *t+1* (i.e. $\frac{Q_t}{Q_t + Q_{t+1}}$). The second divorce ratio is computed as the ratio of total divorces taking place in the last quarter of the year t to the total number of divorces taking place in the first quarter of year *t+1* (i.e. $\frac{Q_t}{Q_{t+1}}$).

Table 2.6: Marginal Effects for the Relative Marriage Tax Price

	Estimated Coefficients				**Marginal Effect**	
	OLS	Logit	OLS	Logit	Logit	Logit
Exclude Couples that Face Large Marriage Subsidy						
Tax Liability Ratio a	-0.017**	-0.082**			-0.032**	
	-0.007	-0.037			(0.015)	
Tax Liability Ratio b			-0.020***	-0.114***		-0.037***
			-0.006	-0.041		(0.013)
Observations	548	548	548	548	548	548
Include Couples that Face Large Marriage Subsidy						
Tax Liability Ratio a	-0.003	-0.018			-0.011	
	(0.004)	(0.020)			(0.012)	
Tax Liability Ratio b			-0.005	-0.031		-0.017
			(0.004)	(0.022)		(0.012)
Observations	554	554	554	554	554	554

Notes: There are six couples that face significantly large marriage subsidy. Estimation controls for the number of children under the age of 5, the duration of the marriage, the level of education for primary earner, the combined level of income, the ratio of secondary earner's income to the total income and religious denomination match. Tax Liability Ratio a refers to the scenario in which the primary earner gets the dependents. Similarly, the variable Tax Liability Ratio b refers to the scenario in which the primary earner gets both the dependents and the "Head of Household" filing status. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 2.7: Estimated Impact of Relative Marriage Tax Price on the Divorce Timing Allowing for Interaction Terms

	(1)	(2)	(3)	(1)	(2)	(3)
Impact of Tax Price						
	-0.062***	-0.062***	-0.076***	-0.040***	-0.040***	-0.050***
	(0.011)	(0.012)	(0.012)	(0.007)	(0.007)	(0.008)
Coefficients						
Children (under 5)	0.049	0.049	0.045	0.05	0.05	0.047
	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)
Religion Match	-0.018	-0.018	-0.022	-0.018	-0.018	-0.023
	(0.042)	(0.042)	(0.042)	(0.042)	(0.042)	(0.042)
Education (Primary Earner)	0.005	0.005	0.009	0.005	0.006	0.007
	(0.005)	(0.006)	(0.006)	(0.005)	(0.006)	(0.006)
Length	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	(0.001)	0.000	0.000	0.000
Combined Income (ln)	0.181***	0.180***	0.197***	0.143***	0.144***	0.183***
	(0.036)	(0.036)	(0.036)	(0.029)	(0.030)	(0.033)
Tax Liability Ratio a	0.780***	0.769***	0.867***	0.551***	0.566***	0.810***
	(0.163)	(0.183)	(0.184)	(0.100)	(0.114)	(0.143)
Income*Tax Liability	-0.084***	-0.083***	-0.093***	-0.059***	-0.060***	-0.086***
	(0.017)	(0.018)	(0.018)	(0.011)	(0.011)	(0.014)
Education*Tax Liability		0	-0.004		0	-0.002
		(0.004)	(0.004)		(0.002)	(0.002)
Length*Tax Liability			0.001***			0.000***
			0.000			0.000
Constant	-1.415***	-1.404***	-1.566***	-1.049***	-1.068***	-1.436***
	-0.357	-0.367	-0.368	-0.298	-0.306	-0.332
Observations	554	554	554	548	548	548

Notes: Estimated impact of the relative marriage tax price is computed at the mean of the control variables. The mean value for income is 10.07 and 9.94. Mean value for education is 10.56 and 10.36. Mean value for the marriage duration is 62.58 and 61.72. The time frame is 1980 through 1996. Income and tax related values are in 1996 dollars. Standard errors in parentheses. m.e stands for marginal effect; s.e stands for standard error. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Appendix A

Current Population Survey Sample Selection

The empirical analysis uses data from the Current Population Survey (CPS) from 1997 to 2008. The CPS is a monthly survey of about 50,000 households. Each household in the CPS is interviewed each month for 4 consecutive months, then ignored for 8 months, then interviewed again for 4 more months. This appendix describes the sample selection in detail using the CPS 2001 as an example.

There are a total of 1,742,243 observation in the 2001 annual CPS. Out of all the individuals in this sample, 30,166 are non-citizen Mexicans. Imposing the restriction for the Mexicans to have arrived in the United States after the year 1987, the sample reduces to 20,945 observations. The sample is further restricted as each non-citizen Mexican has to have lived in the country for at least as many years as are required to satisfy state eligibility requirements for in-state tuition. For the states of New York and Oklahoma I impose a 2 year restriction. For New Mexico I impose a 1 year restriction. For the other seven states that adopt in-state tuition, I use a 3 year restriction. Satisfying the residency requirements, the sample reduces to 14,402

observations. Out of 14,402 individual observations, there are 1,796 individuals with ages between 18 and 22 years old. Same restrictions are imposed for the other non-citizen groups considered in the paper: the non-Latino immigrants and non-Mexican Latino immigrants.

The sample includes tuition data for both undergraduate public universities and community colleges. However, the sample does not include tuition information for community colleges in North Dakota as data is not available for all years. For this year, there will be observations missed as there are no observations for non-citizen Mexicans satisfying the above requirements. On a similar note, undergraduate tuition for universities and colleges does not include the states of Alaska, Delaware, Hawaii and Wyoming due to lack of consistent tuition series for those states. Thus, all five states mentioned above are dropped from the analysis. For this year, there are no observations missed for the states Alaska and Wyoming. 16 observations are missed as there are 13 observation in Delaware and 3 in Hawaii that are dropped due to inconsistency in tuition series.

Appendix B

Enacted Legislation for In-State Tuition

Table B.1: States that Offer In-State Tuition to Undocumented Immigrants

State	**Date Passed**	**Date Enacted**	**Residency Requirement**	**State Aid Offered**
Texas	June, 2001	June, 2001	3 Years	Yes
California	October, 2001	January, 2002	3 Years	No
Utah	March, 2002	July, 2002	3 Years	Yes
New York*	June, 2002	August, 2003	2 Years	No
Washington	May, 2003	July, 2003	3 Years	No
Oklahoma	May, 2003	May, 2003	2 Years	Yes
Illinois	May, 2003	May, 2003	3 Years	No
Kansas	May, 2004	July, 2004	3 Years	No
New Mexico	April, 2005	April, 2005	1 Year	No
Nebraska	April, 2006	April, 2006	3 Years	No

Source: Olivas (2009) and National Immigration Law Center (2003).
Notes: New York has offered in-state tuition since 1996.

Appendix C

Level of Tuition by State

Table C.1: Average Value of Tuition by State

	Public University		Community College	
	In-State	**Out-of-State**	**In-State**	**Out-of-State**
States that Adopted Policy				
California	7.930	9.449	6.301	8.585
Illinois	8.620	9.348	7.593	9.159
Kansas	8.071	9.209	7.508	8.065
Nebraska	8.222	8.799	7.511	7.731
New Mexico	7.830	9.134	6.850	7.726
New York	8.557	9.353	8.117	8.765
Oklahoma	7.942	8.812	7.571	8.466
Texas	8.259	9.405	7.234	7.962
Utah	7.969	9.068	7.602	8.847
Washington	8.285	9.490	7.734	8.991
States that Proposed Policy				
Florida	8.059	9.555	7.514	8.815
New Jersey	8.997	9.467	7.998	8.741
States that Ban Policy				
Arizona	8.199	9.491	7.149	8.783
Colorado	8.080	9.351	7.774	9.153
Mean ln(Tuition)	8.354	9.343	7.608	8.688

Source: Higher Education Coordination Board Surveys

Appendix D

Effect of the In-State Tuition Subsidy under Different Scenarios

Table D.1: Effect of In-State Tuition Subsidy by Age and State when Policy Becomes Effective a Year after Enactment Date

Policy Effects by Age Group			Policy Effects by State			Policy Effects by State and Age		
Age 17	-0.036***	(0.008)	California	0.020**	(0.009)	California		
Age 18	0.016	(0.012)	Illinois	0.011	(0.017)	Age 17	-0.030***	(0.010)
Age 19	0.020	(0.013)	Kansas	-0.091***	(0.026)	Age 18	0.022	(0.014)
Age 20	0.038***	(0.011)	Nebraska	-0.030	(0.035)	Age 19	0.025*	(0.014)
Age 21	0.024**	(0.010)	New Mexico	-0.022	(0.025)	Age 20	0.044***	(0.013)
Age 22	0.012	(0.009)	New York	0.034**	(0.016)	Age 21	0.029**	(0.012)
			Oklahoma	0.026	(0.026)	Age 22	0.018*	(0.011)
			Texas	0.016	(0.012)	Illinois		
			Utah	0.015	(0.015)	Age 17	-0.039**	(0.017)
			Washington	0.067***	(0.021)	Age 18	0.013	(0.020)
						Age 19	0.016	(0.020)
						Age 20	0.035*	(0.019)
						Age 21	0.020	(0.019)
						Age 22	0.009	(0.017)
						Kansas		
						Age 17	-0.136***	(0.027)
						Age 18	-0.084***	(0.028)
						Age 19	-0.081***	(0.029)
						Age 20	-0.062**	(0.028)
						Age 21	-0.077***	(0.028)
						Age 22	-0.088***	(0.027)
						Nebraska		
						Age 17	-0.083**	(0.036)
						Age 18	-0.031	(0.037)
						Age 19	-0.029	(0.037)
						Age 20	-0.010	(0.036)
						Age 21	-0.024	(0.037)
						Age 22	-0.036	(0.036)
						New Mexico		
						Age 17	-0.069***	(0.025)
						Age 18	-0.017	(0.027)
						Age 19	-0.014	(0.027)
						Age 20	0.005	(0.026)
						Age 21	-0.010	(0.026)
						Age 22	-0.021	(0.026)
						New York		
						Age 17	-0.013	(0.017)
						Age 18	0.039**	(0.019)
						Age 19	0.041**	(0.019)
						Age 20	0.060***	(0.018)
						Age 21	0.046***	(0.017)
						Age 22	0.034**	(0.017)
						Oklahoma		
						Age 17	-0.026	(0.027)
						Age 18	0.026	(0.028)
						Age 19	0.029	(0.028)
						Age 20	0.048*	(0.027)
						Age 21	0.033	(0.027)
						Age 22	0.022	(0.027)
						Texas		
						Age 17	-0.034***	(0.013)
						Age 18	0.018	(0.015)
						Age 19	0.021	(0.016)
						Age 20	0.040***	(0.015)
						Age 21	0.025*	(0.014)
						Age 22	0.014	(0.013)
						Utah		
						Age 17	-0.035**	(0.016)
						Age 18	0.017	(0.018)
						Age 19	0.020	(0.018)
						Age 20	0.039**	(0.017)
						Age 21	0.024	(0.017)
						Age 22	0.012	(0.016)
						Washington		
						Age 17	0.015	(0.021)
						Age 18	0.067***	(0.023)
						Age 19	0.070***	(0.023)
						Age 20	0.089***	(0.023)
						Age 21	0.074***	(0.022)
						Age 22	0.062***	(0.021)

Notes: Policy becomes effective one year after enactment date. The sample of analysis is restricted to non-citizen Mexicans young adults who entered the U.S. after 1987.Sample is restricted to 17-22 years old persons in the analyses on currently attending college. Estimation controls for age, gender, marital status, race, month of the year, state and year fixed effects, monthly state unemployment rate and the proportion of the non-Hispanic White population with at least some college education. Robust standard errors in parentheses. The aggregate impact of the policy is 0.014 and is statistically significant at 5 percent. Those results are available upon request. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table D.2: Effect of In-State Tuition Subsidy by Age and State when Policy Becomes Effective on Enactment Date

Policy Effects by Age Group			Policy Effects by State			Policy Effects by State and Age		
Age 17	-0.038***	(0.013)	California	0.029***	(0.009)	California		
Age 18	0.008	(0.016)	Illinois	-0.033**	(0.016)	Age 17	-0.017	(0.014)
Age 19	0.017	(0.020)	Kansas	-0.102***	(0.037)	Age 18	0.027*	(0.016)
Age 20	0.035**	(0.018)	Nebraska	-0.000	(0.021)	Age 19	0.037*	(0.020)
Age 21	0.013	(0.015)	New Mexico	-0.026	(0.030)	Age 20	0.055***	(0.017)
Age 22	0.004	(0.012)	New York	-0.009	(0.015)	Age 21	0.032**	(0.015)
			Oklahoma	0.028	(0.028)	Age 22	0.025**	(0.012)
			Texas	0.016	(0.011)	Illinois		
			Utah	0.019	(0.017)	Age 17	-0.078***	(0.019)
			Washington	0.049**	(0.025)	Age 18	-0.034	(0.023)
						Age 19	-0.025	(0.023)
						Age 20	-0.006	(0.023)
						Age 21	-0.029	(0.021)
						Age 22	-0.037**	(0.018)
						Kansas		
						Age 17	-0.142***	(0.037)
						Age 18	-0.098***	(0.038)
						Age 19	-0.089**	(0.041)
						Age 20	-0.070*	(0.040)
						Age 21	-0.093**	(0.038)
						Age 22	-0.101***	(0.037)
						Nebraska		
						Age 17	-0.048**	(0.024)
						Age 18	-0.004	(0.026)
						Age 19	0.005	(0.025)
						Age 20	0.024	(0.027)
						Age 21	0.001	(0.025)
						Age 22	-0.007	(0.023)
						New Mexico		
						Age 17	-0.070**	(0.030)
						Age 18	-0.026	(0.034)
						Age 19	-0.017	(0.035)
						Age 20	0.002	(0.034)
						Age 21	-0.021	(0.032)
						Age 22	-0.029	(0.032)
						New York		
						Age 17	-0.055***	(0.019)
						Age 18	-0.011	(0.020)
						Age 19	-0.001	(0.023)
						Age 20	0.017	(0.024)
						Age 21	-0.005	(0.018)
						Age 22	-0.013	(0.018)
						Oklahoma		
						Age 17	-0.018	(0.030)
						Age 18	0.026	(0.033)
						Age 19	0.036	(0.033)
						Age 20	0.054*	(0.033)
						Age 21	0.032	(0.032)
						Age 22	0.024	(0.030)
						Texas		
						Age 17	-0.030*	(0.015)
						Age 18	0.014	(0.016)
						Age 19	0.024	(0.022)
						Age 20	0.042**	(0.018)
						Age 21	0.019	(0.016)
						Age 22	0.012	(0.013)
						Utah		
						Age 17	-0.026	(0.020)
						Age 18	0.018	(0.022)
						Age 19	0.028	(0.024)
						Age 20	0.046**	(0.023)
						Age 21	0.023	(0.020)
						Age 22	0.016	(0.020)
						Washington		
						Age 17	0.002	(0.026)
						Age 18	0.046	(0.028)
						Age 19	0.055*	(0.029)
						Age 20	0.074**	(0.029)
						Age 21	0.051*	(0.027)
						Age 22	0.043*	(0.025)

Notes: Policy becomes effective on the enactment date. The sample of analysis is restricted to non-citizen Mexicans young adults who entered the U.S. after 1987.Sample is restricted to 17-22 years old persons in the analyses on currently attending college. Estimation controls for age, gender, marital status, race, month of the year, state and year fixed effects, monthly state unemployment rate and the proportion of the non-Hispanic White population with at least some college education. Robust standard errors in parentheses. The aggregate impact of the policy is 0.008 and is not statistically significant. Those results are available upon request. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table D.3: Effect of In-State Tuition Subsidy by Age and State when Policy Becomes Effective a Year after Enactment Date using Kaushal(2008) data sample

Policy Effects by Age Group			Policy Effects by State			Policy Effects by State and Age		
Age 17	-0.032*	(0.017)	California	0.044***	(0.012)	California		
Age 18	0.045*	(0.027)	Illinois	-0.034	(0.031)	Age 17	-0.013	(0.019)
Age 19	0.040	(0.028)	Kansas	-0.031	(0.030)	Age 18	0.063**	(0.026)
Age 20	0.042	(0.027)	Nebraska	0.016	(0.019)	Age 19	0.059**	(0.027)
Age 21	0.028	(0.029)	New Mexico	0.016	(0.019)	Age 20	0.062**	(0.026)
Age 22	0.022	(0.021)	New York	0.016	(0.019)	Age 21	0.048	(0.031)
			Oklahoma	-0.016	(0.029)	Age 22	0.042*	(0.022)
			Texas	0.012	(0.014)	Illinois		
			Utah	0.019	(0.020)	Age 17	-0.091***	(0.033)
			Washington	0.030	(0.023)	Age 18	-0.014	(0.038)
						Age 19	-0.019	(0.040)
						Age 20	-0.015	(0.042)
						Age 21	-0.030	(0.040)
						Age 22	-0.036	(0.035)
						Kansas		
						Age 17	-0.074**	(0.031)
						Age 18	0.002	(0.040)
						Age 19	-0.002	(0.038)
						Age 20	0.001	(0.038)
						Age 21	-0.013	(0.042)
						Age 22	-0.020	(0.034)
						Nebraska		
						Age 17	-0.038	(0.025)
						Age 18	0.038	(0.030)
						Age 19	0.034	(0.031)
						Age 20	0.037	(0.030)
						Age 21	0.023	(0.033)
						Age 22	0.017	(0.025)
						New Mexico		
						Age 17	-0.038	(0.025)
						Age 18	0.038	(0.030)
						Age 19	0.034	(0.031)
						Age 20	0.037	(0.030)
						Age 21	0.023	(0.033)
						Age 22	0.017	(0.025)
						New York		
						Age 17	-0.038	(0.025)
						Age 18	0.038	(0.030)
						Age 19	0.034	(0.031)
						Age 20	0.037	(0.030)
						Age 21	0.023	(0.033)
						Age 22	0.017	(0.025)
						Oklahoma		
						Age 17	-0.086**	(0.033)
						Age 18	-0.009	(0.035)
						Age 19	-0.014	(0.040)
						Age 20	-0.010	(0.038)
						Age 21	-0.025	(0.042)
						Age 22	-0.031	(0.038)
						Texas		
						Age 17	-0.046***	(0.018)
						Age 18	0.030	(0.026)
						Age 19	0.026	(0.032)
						Age 20	0.029	(0.028)
						Age 21	0.015	(0.028)
						Age 22	0.008	(0.023)
						Utah		
						Age 17	-0.040	(0.026)
						Age 18	0.036	(0.035)
						Age 19	0.032	(0.034)
						Age 20	0.035	(0.032)
						Age 21	0.021	(0.034)
						Age 22	0.014	(0.027)
						Washington		
						Age 17	-0.024	(0.026)
						Age 18	0.052	(0.035)
						Age 19	0.048	(0.037)
						Age 20	0.051	(0.036)
						Age 21	0.037	(0.032)
						Age 22	0.030	(0.029)

Notes: Kaushal(2008)'s sample uses CPS MORG data from 1997-2005. Policy becomes effective one year after the enactment date. The sample of analysis is restricted to non-citizen Mexicans young adults who entered the U.S. after 1987. Estimation controls for age, gender, marital status, race, month of the year, state and year fixed effects, monthly state unemployment rate, the proportion of the non-Hispanic White population with at least some college education, as well as the proportion of non-citizen Mexicans with at least a high-school degree. Robust and clustered standard errors in parentheses. The aggregate impact of the policy is 0.025 and is statistically significant at 5 percent. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Appendix E

Main Regression Coefficients

Table E.1: Regression Coefficients for College Enrolment of Non-Citizen Mexicans using Public University Prices

	Age 18-20			**Age 21-22**		
	Overall	**Men**	**Women**	**Overall**	**Men**	**Women**
In-State Tuition (α_1)	-0.057	-0.031	-0.076	-0.211***	-0.210***	-0.182
	(0.082)	(0.100)	(0.127)	(0.070)	(0.079)	(0.124)
In-State Tuition*Policy (α_3)	-0.035	0.107*	-0.247***	0.098**	0.277***	-0.094
	(0.049)	(0.059)	(0.082)	(0.039)	(0.047)	(0.070)
Out-of-State Tuition (α_2)	-0.060	0.077	-0.276	0.153**	0.085	0.086
	(0.102)	(0.124)	(0.172)	(0.076)	(0.084)	(0.140)
Out-of-State Tuition*Policy (α_4)	0.213**	0.025	0.446***	0.070	-0.184	0.391***
	(0.091)	(0.112)	(0.156)	(0.086)	(0.132)	(0.145)
Policy (α_5)	-1.681**	-1.051	-2.190	-1.412*	-0.500	-2.856**
	(0.833)	(0.995)	(1.445)	(0.768)	(1.134)	(1.295)
Years in the US	0.012***	0.011***	0.014***	0.011***	0.009***	0.011***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Unemployment	-0.008	-0.003	-0.020*	0.007	-0.002	0.014
	(0.007)	(0.008)	(0.010)	(0.006)	(0.006)	(0.010)
Non Hispanic Proportion with College	0.027	0.058*	-0.045	-0.044**	-0.027	-0.062
	(0.025)	(0.030)	(0.040)	(0.021)	(0.023)	(0.039)
Mexican Proportion with High School	0.038	-0.011	0.146***	0.050**	0.033	0.060
	(0.029)	(0.033)	(0.056)	(0.022)	(0.026)	(0.041)
Minimum Wage	-0.014*	-0.016	-0.005	0.009	0.008	0.017*
	(0.008)	(0.010)	(0.012)	(0.006)	(0.008)	(0.010)
Constant	1,167.716**	-39.777**	543.681***	2,060.196***	229.215***	-40.882
	(554.310)	(15.715)	(130.527)	(46.840)	(47.368)	(41.933)
Observations	11915	6534	5381	10611	6226	4385
R-squared	0.085	0.063	0.126	0.090	0.075	0.149

Notes: The sample of analysis is restricted to non-citizen Mexicans young adults who entered the U.S. after 1987. Coefficients for individual characteristics (age, sex, marital status) are excluded in order to simplify the display. Complete set of regression coefficients are available upon request. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table E.2: Regression Coefficients for College Enrolment of Non-Citizen Mexicans using Community College Prices

	Age 18-20			Age 21-22		
	Overall	**Men**	**Women**	**Overall**	**Men**	**Women**
In-State Tuition (α_1)	-0.081**	-0.051	-0.103*	-0.064**	-0.092***	-0.022
	(0.036)	(0.046)	(0.059)	(0.029)	(0.034)	(0.051)
In-State Tuition*Policy (α_3)	-0.056**	-0.010	-0.098***	0.050***	0.119***	-0.028
	(0.023)	(0.029)	(0.037)	(0.018)	(0.023)	(0.033)
Out-of-State Tuition (α_2)	-0.050	-0.167*	0.124	-0.035	-0.044	-0.053
	(0.055)	(0.085)	(0.084)	(0.044)	(0.054)	(0.070)
Out-of-State Tuition*Policy (α_4)	0.098***	0.046	0.144***	-0.007	-0.017	-0.003
	(0.031)	(0.041)	(0.049)	(0.027)	(0.035)	(0.044)
Policy (α_5)	-0.419	-0.269	-0.546	-0.252	-0.645**	0.247
	(0.292)	(0.377)	(0.465)	(0.240)	(0.318)	(0.383)
Years in the US	0.012***	0.011***	0.014***	0.011***	0.009***	0.012***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Unemployment	-0.008	-0.002	-0.022**	0.002	-0.004	0.007
	(0.007)	(0.008)	(0.010)	(0.005)	(0.006)	(0.009)
Non Hispanic Proportion with College	0.019	0.050*	-0.037	-0.055***	-0.032	-0.083**
	(0.024)	(0.030)	(0.040)	(0.020)	(0.023)	(0.038)
Mexican Proportion with High School	0.030	-0.009	0.126**	0.038*	0.014	0.067*
	(0.028)	(0.031)	(0.056)	(0.021)	(0.025)	(0.038)
Minimum Wage	-0.014*	-0.024**	0.003	0.004	0.002	0.013
	(0.008)	(0.010)	(0.011)	(0.006)	(0.007)	(0.009)
Constant	1,132.524**	-20.616	11.725	2,097.168***	128.197	-28.913
	(556.264)	(31.827)	(42.845)	(47.965)	(188.347)	(40.265)
Observations	12034	6620	5414	10792	6354	4438
R-squared	0.089	0.069	0.129	0.096	0.089	0.150

Notes: The sample of analysis is restricted to non-citizen Mexicans young adults who entered the U.S. after 1987. Coefficients for individual characteristics (age, sex, marital status) are excluded in order to simplify the display. Complete set of regression coefficients are available upon request. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Appendix F

Complete List of Regression Coefficients

Table F.1: Regression Coefficients using Public University Prices for Non-Citizen Mexican Immigrants aged 18 to 20 years old

Variable	Coefficient	Std. Error	P.Value
In-State Tuition	-0.057	0.082	0.487
Out-of-State Tuition	-0.060	0.102	0.560
In-State Tuition*Policy	-0.035	0.049	0.477
Out-of-State Tuition*Policy	0.213	0.091	0.019
Policy	-1.681	0.833	0.044
Age 19	0.037	0.008	0.000
Age 20	0.018	0.007	0.011
Female	0.048	0.027	0.069
Married Army Forces	-0.032	0.035	0.356
Married Spouse Absent	0.094	0.020	0.000
Widowed	0.063	0.020	0.001
Divorced	0.031	0.050	0.531
Separated	0.028	0.026	0.278
Never Married	0.111	0.006	0.000
Years in the US	0.012	0.001	0.000
Unemployment	-0.008	0.007	0.228
Non Hispanic Proportion with College	0.027	0.025	0.274
Mexican Proportion with High School	0.038	0.029	0.195
Year 1998	-0.087	0.032	0.006

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Table F.1 – Continued

Variable	Coefficient	Std. Error	P.Value
Year 1999	-0.062	0.035	0.073
Year 2000	-0.037	0.035	0.299
Year 2001	-0.008	0.035	0.820
Year 2002	-0.033	0.030	0.269
Year 2003	-0.030	0.026	0.242
Year 2004	-0.028	0.018	0.129
Year 2005	(dropped)		
Year 2006	-0.053	0.031	0.088
Year 2007	-0.029	0.021	0.174
Year 2008	(dropped)		
Female*Year 1998	0.018	0.032	0.574
Female*Year 1999	0.041	0.036	0.254
Female*Year 2000	-0.048	0.032	0.136
Female*Year 2001	0.009	0.036	0.799
Female*Year 2002	0.004	0.032	0.892
Female*Year 2003	0.046	0.033	0.163
Female*Year 2004	0.016	0.031	0.603
Female*Year 2005	(dropped)		
Female*Year 2006	0.013	0.031	0.679
Female*Year 2007	0.039	0.032	0.229
Female*Year 2008	0.003	0.032	0.929
Minimum Wage	-0.014	0.008	0.071

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Table F.1 – Continued

Variable	Coefficient	Std. Error	P.Value
February	-0.012	0.014	0.400
March	-0.012	0.014	0.408
April	-0.010	0.014	0.484
May	-0.024	0.014	0.085
June	-0.046	0.014	0.001
July	-0.042	0.014	0.003
August	-0.030	0.014	0.039
September	0.013	0.016	0.387
October	0.015	0.015	0.334
November	0.002	0.015	0.909
December	0.019	0.016	0.236
Fiscal Year 1997	(dropped)		
Fiscal Year 1998	0.052	0.027	0.055
Fiscal Year 1999	0.074	0.029	0.010
Fiscal Year 2000	0.041	0.031	0.191
Fiscal Year 2001	0.023	0.030	0.451
Fiscal Year 2002	0.067	0.028	0.014
Fiscal Year 2003	0.033	0.024	0.162
Fiscal Year 2004	0.016	0.016	0.338
Fiscal Year 2005	(dropped)		
Fiscal Year 2006	-0.015	0.038	0.695
Fiscal Year 2007	-0.016	0.032	0.602

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Table F.1 – Continued

Variable	Coefficient	Std. Error	P.Value
Fiscal Year 2008	-0.031	0.021	0.146
Vermont	(dropped)		
Massachusetts	-1269.822	556.386	0.022
Rhode Island	-1190.388	555.076	0.032
Connecticut	-1222.659	555.719	0.028
New York	-1175.286	554.407	0.034
New Jersey	-1202.491	554.635	0.030
Pennsylvania	-1149.075	554.472	0.038
Ohio	-1232.453	555.049	0.026
Indiana	-1259.822	555.707	0.023
Illinois	-1168.718	554.426	0.035
Michigan	-1148.092	554.831	0.039
Wisconsin	-1210.678	554.525	0.029
Minnesota	-1183.485	554.322	0.033
Iowa	-1134.939	554.564	0.041
Missouri	-1205.558	554.575	0.030
North Dakota	-856.687	567.998	0.132
South Dakota	-1170.193	554.261	0.035
Nebraska	-1185.971	554.636	0.033
Kansas	-1153.448	554.521	0.038
Maryland	-1273.462	554.947	0.022
Virginia	-1183.509	554.587	0.033

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Table F.1 – Continued

Variable	Coefficient	Std. Error	P.Value
West Virginia	-1157.768	554.682	0.037
North Carolina	-1148.362	554.468	0.038
South Carolina	-1199.452	554.510	0.031
Georgia	-1186.872	554.255	0.032
Florida	-1207.016	554.432	0.029
Kentucky	-1167.377	554.721	0.035
Tennessee	-1231.682	554.562	0.026
Alabama	-1165.643	554.593	0.036
Mississippi	-1160.627	554.463	0.036
Arkansas	-1140.058	554.553	0.040
Louisiana	-1181.309	554.507	0.033
Oklahoma	-1213.022	554.646	0.029
Texas	-1193.275	554.344	0.031
Idaho	-1184.090	554.432	0.033
Colorado	-1194.325	554.360	0.031
New Mexico	-1176.676	554.483	0.034
Arizona	-1160.709	554.390	0.036
Utah	-1178.599	554.421	0.034
Nevada	-1187.727	554.419	0.032
Washington	-1200.593	554.360	0.030
Oregon	-1196.422	554.414	0.031
California	-1173.637	554.369	0.034

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Table F.1 – Continued

Variable	Coefficient	Std. Error	P.Value
Year	-0.582	0.277	0.035
Year*Vermont	0.001	0.001	0.032
Year*Massachusetts	0.634	0.278	0.022
Year*Rhode Island	0.594	0.277	0.032
Year*Connecticut	0.610	0.277	0.028
Year*New York	0.587	0.277	0.034
Year*New Jersey	0.600	0.277	0.030
Year*Pennsylvania	0.574	0.277	0.038
Year*Ohio	0.615	0.277	0.026
Year*Indiana	0.629	0.277	0.023
Year*Illinois	0.584	0.277	0.035
Year*Michigan	0.573	0.277	0.039
Year*Wisconsin	0.604	0.277	0.029
Year*Minnesota	0.591	0.277	0.033
Year*Iowa	0.567	0.277	0.041
Year*Missouri	0.602	0.277	0.030
Year*North Dakota	0.428	0.284	0.131
Year*South Dakota	0.584	0.277	0.035
Year*Nebraska	0.592	0.277	0.033
Year*Kansas	0.576	0.277	0.038
Year*Maryland	0.636	0.277	0.022
Year*Virginia	0.591	0.277	0.033

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Table F.1 – Continued

Variable	Coefficient	Std. Error	P.Value
Year*West Virginia	0.578	0.277	0.037
Year*North Carolina	0.573	0.277	0.038
Year*South Carolina	0.599	0.277	0.031
Year*Georgia	0.593	0.277	0.032
Year*Florida	0.603	0.277	0.030
Year*Kentucky	0.583	0.277	0.035
Year*Tennessee	0.615	0.277	0.026
Year*Alabama	0.582	0.277	0.036
Year*Mississippi	0.579	0.277	0.036
Year*Arkansas	0.569	0.277	0.040
Year*Louisiana	0.590	0.277	0.033
Year*Oklahoma	0.606	0.277	0.029
Year*Texas	0.596	0.277	0.031
Year*Idaho	0.591	0.277	0.033
Year*Colorado	0.596	0.277	0.031
Year*New Mexico	0.587	0.277	0.034
Year*Arizona	0.579	0.277	0.036
Year*Utah	0.588	0.277	0.034
Year*Nevada	0.593	0.277	0.032
Year*Washington	0.599	0.277	0.030
Year*Oregon	0.597	0.277	0.031
Year*California	0.586	0.277	0.034

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Table F.1 – Continued

Variable	Coefficient	Std. Error	P.Value
Constant	1167.716	554.310	0.035

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